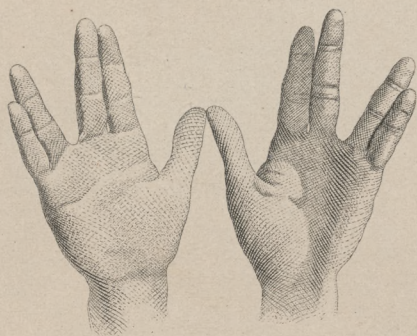
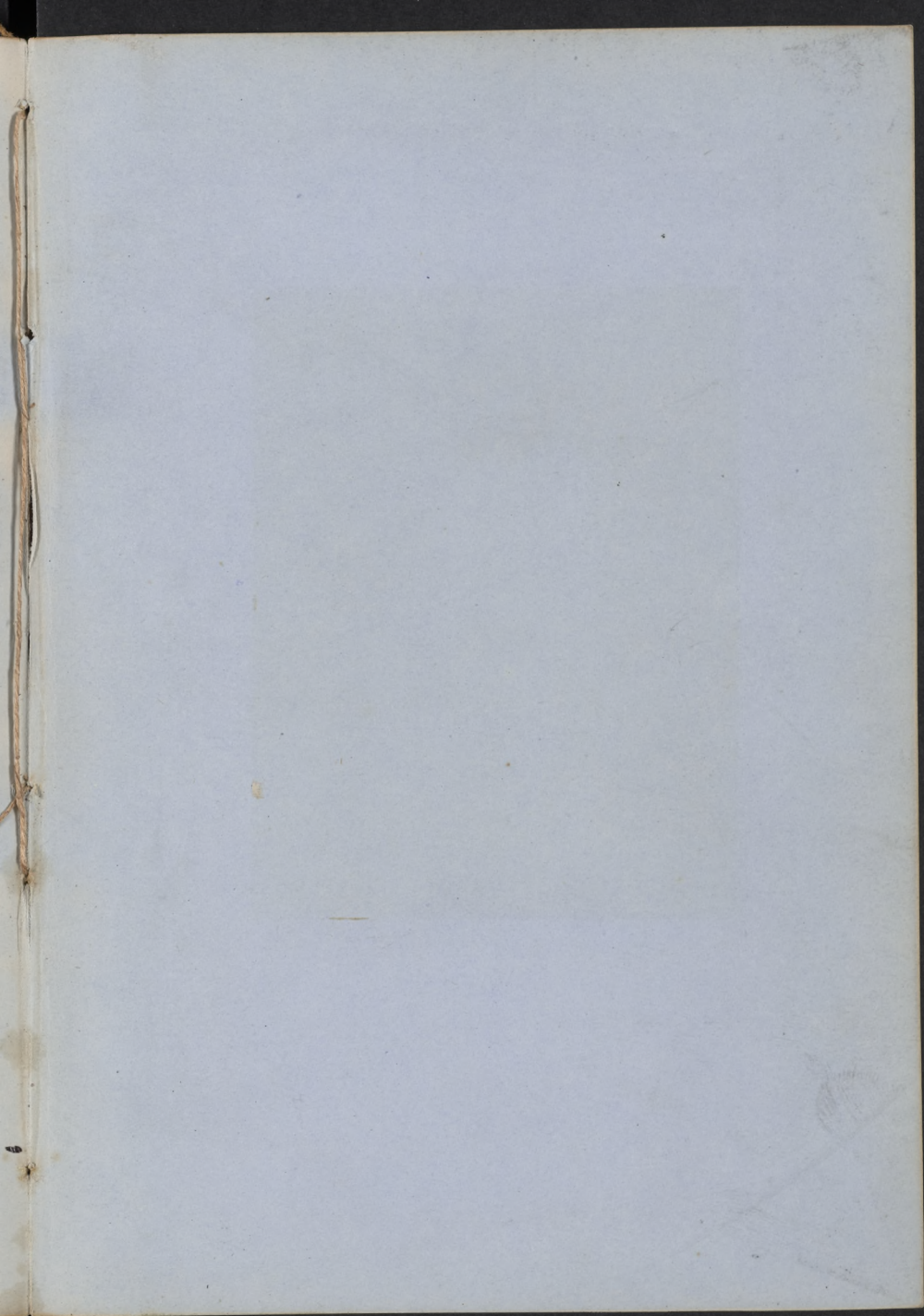




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Notes on Prof Gross'
Lectures on Surgery
Jefferson Medical College
1886-7

Vol 11 — (see Vol 11)

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Lithotomus V. 2

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Prolapse of the bowell is met with most frequently in old in young subjects, presenting itself, either partially or Completely. A partial prolapse, Consists in a protrusion, Simply of the mucous membrane, while the Complete prolapse Consists in the protrusion of the entire gut. The invaginated portion usually Consists of the upper part of the rectum, or may consist of a portion of the Colon. In the child it frequently follows upon any disease attended with much straining in defecation, at which age also there is some predisposition to this disease, when the Sacrum is straighter & the abdominal muscles are feeble, as they are in later years of life. People laboring under obstruction of the urethra &c, are apt to have prolapse of the Anus. In the female it may take place in consequence of retroversion of the uterus. This disease frequently gets well alone, with comparatively little treatment, attending only to the patient's bowels, & secretions, using the recumbent posture with slightly astringent injections. When the case is of a more permanent or difficult character, this will not do. If there is partial prolapse, make use of applications directly to the affected surface, especially if there is edema of the subcutaneous cellular

Substance. Then apply a weak solution of the tincture of iodine, or
 where the tumors are large, make use of punctures or slight incisions,
 or where the disease is intractable some folds of mucous membrane
 may be tied upon each side of the bowel, & in this way a cure, will
 gradually be effected; or the offending portion may be removed, with
 a Knife or pair of Scissors. In the more important forms of this af-
 fection, a more serious operation is frequently required. Very offensive
 bowel becomes highly inflamed, & even strangulated by the contraction
 of the Sphincter muscle. Place the patient upon his abdomen &
 apply Leeches, & Cold & warm water dressings to reduce the mass, so as
 to be able to return it with greater facility, than oiling the thumb
 & fingers make systematic compression upon the tumor, & reduce it in
 that way, & afterwards maintain the parts, if necessary by means of a
 Compress and at T Bandage. It may be necessary to make use of
 a slight incision, to divide a few fibres of the Sphincter muscle, but
 this is rarely requisite. The protruding portion should not be
 cut off under any circumstances. Where the parts cannot be
 returned within the bowel an operation may be performed,
 consisting in cutting off some of the folds of the skin which

converge towards the anus. Small Cases use astringent injections
 + injections of Cold water, & the bowels should be evacuated in the
 recumbent position. Stricture of the Rectum may be
 Simple or Carcinomatous, most frequently the latter. This may
 result from habitual irritation, or may be produced by a large
 ulcer, or may follow upon a wound or ulceration. The immedi-
 ate Cause is an infusion of lymph into the submucous Cellular
 Substance. The most Common Seat for the affection is two or
 three inches above the verge of the Anus. It occurs most fre-
 quently in advanced age. The patient experiences difficulty
 in evacuating the bowels, & the fecal matter will usually pre-
 sent itself in a ribband-like form, and much smaller in size
 than in the natural state. This disease is not malignant.
 Relief must be effected by means of the bougie. It must be
 passed into the stricture and allowed to remain several min-
 utes according to the tolerance of the parts, and the instrument
 should be reintroduced every 48 hours at first, and
 more frequently afterwards according to circumstances,
 effecting dilatation in this manner.

XLII There is sometimes a stricture of the rectum owing to a carcinomatous affection. This is most common in Adage, & occurs in both sexes. It is frequently a primary disease commencing in the bowel and anus, & extending to the surrounding parts. Sometimes it is Secondary, beginning in the neighboring parts, and gradually extending to the bowel & the anus. There is much difficulty in micturition with a frequent desire to pass water. If the patient is young, & the disease rapid in growth, & if of considerable growth, it may be an encyphaloid disease, but in the generality of instances it is Schirrus or Colloid in its character especially the former. As the disease progresses, ulceration gradually takes place leading to a discharge which is always offensive. Such a stricture is irremediable, but the symptoms must be palliated by the ordinary remedies. Keep the bowels in a soluble condition, employ injections of cool, tepid, & warm water, use demulcent fluids medicated with laudanum or morphine, & observe great cleanliness. Much cannot be expected from dilatation but temporary relief may be afforded in this way. In the early stages when occurring at the verge of the anus, it may, under

certain circumstances, be excised. Sometimes there are to be found Foreign bodies in the Rectum and in the Anus which are of various kinds. They may pass into the alimentary canal, through the mouth, & lodge here; they may be developed in the Canal; or may be introduced into the anus by accident or design. The most common bodies found here, are pieces of bone, undigested meat, bread, granules, pins, needles & such Substances, which, when allowed to remain, give rise to inflammation. The body may sometimes be removed by the finger without much difficulty but sometimes, forceps are required. When the substance is of considerable bulk, a pair of lithotomy forceps must be employed. If the foreign substance is developed in the bowel, consisting of an alvine Concretion, it may sometimes be removed by the hand, & may sometimes be broken up & removed; & rarely, a division of the sphincter muscle may be required. Occasionally ascarides lodge in this part of the rectum. They are usually rolled up & surrounded by incysted mucus, & may produce an immense amount of suffering. Clearance may be effected by means of a Scoop, by the handle of a Spoon, or by means of a small Spoon,

carefully introduced into the bowel, & by injecting some irritating fluid. Sometimes the lower bowel is distended with fecal matter which accumulates almost imperceptibly until it amounts to so much that the patient cannot expel it, & occurs generally in protracted illness. Neuralgia of the Rectum & Anus Sometimes occurs coming on either periodically or at irregular intervals, & it may be dependant upon derangement of the digestive organs. There is great tenderness upon examination by the finger, & there is pain during the act of defecation. Sometimes one particular portion of the rectum is the seat of the irritation. The anti-neuralgic remedies are quinine with strichnyne or belladonna, or morphia, or opium. In periodical attacks the best remedy is quinine say 10 grs, 2 or 3 times a day, enough to impress the system. When the disease is more chronic, administer 2 grs with $\frac{1}{30}^{\text{th}}$ of a grain of strichnyne, or $\frac{1}{4}$ gr. Extract of belladonna, or $\frac{1}{15}$ or $\frac{1}{20}$ of a grain of arsenious acid, guarded by laudanum or morphia, given 3 times in the 24 hours. Attend to the general health, & use cold or warm water, externally & internally.

Children are sometimes born with imperforate anus

which may be effected by the Continuation of the Common integuments, being extended, from one buttock to the other, when a soft & falling tumor may be felt there, fluctuating. In another form of this affection, the slit exists but there is a septum some little distance above. In another variety, there is a fibrous or fibro-cartilagenous substance intervening between the parts where the anus should be, & the inferior part of the pelvis. In some cases the bowel terminates in the vagina, or in the commencement of the urethra, or in the posterior & inferior part of the urinary bladder. When the case is simple, the operation consists in making a crucial incision into the part, and the 4 flaps may be immediately dissected off. If necessary closure may be prevented by the introduction of a tent. When there is a septum a little above the verge of the anus, carry the knife into the anus, & divide the membrane in two different directions removing the flap if necessary. When there is a fibrous, or fibro-cartilagenous structure in the way, a serious discretion must be made which may, after all, fail in affording relief. Place the patient in the same position as when operating

for stone in the bladder. Make an incision from the prepuce, back-
wards toward the Coccyx, directly in the median line. Carry the instru-
ment backwards towards the Sacrum, & work upward. Should the
bowel be found, make an incision into it, & endeavor to prevent
closure of the wound by the introduction of a tent, which should be
changed several times a day, & dilate the opening frequently.

When the bowel terminates in the vagina, or urethra, or in the
posterior & inferior portion of the bladder, little can be done. In
the first place make an incision along the median line, & when the
bowel is reached, dilate it, & keep it pervious by means of a tent
& bougie. When the bowel terminates in the bladder, the affec-
tion cannot be removed. The operation for artificial anus
has been recommended for this & some previous affections, but
cannot be too much condemned and discountenanced.

Pruritus of the Anus or itching of the anus is a disordered charac-
terized by excessive & intolerant itching, so constant & imperative
that the patient is obliged to scratch no matter where he may
be. It occurs, generally, after middle age. The skin is a little
rough & hard as well as thick, & when the patient has recently

Scratched, there is a little abrasion of the cuticle. There may be small vesicles filled with a little fluid, which generally occupy one particular spot, although the affection may shift its position. Sometimes the cause of the disease is in the bowels or in the anus. There is generally some derangement of the digestive apparatus, & the cause should always be rectified, if possible, avoiding all stimulants, and all condiments in the taking of food. Keep the bowels of the patient in a soluble condition, & give occasionally a mercurial cathartic. When the disease is very obstinate, keep the patient under the influence of small quantities of mercury. Locally make use of cold water, & Soap, twice in the 24 hours; and occasionally inject cold water. The patient may use the yellow wash. All such applications are productive of mischief.

XLIII. *Hernia or Rupture.* This accident is of frequent occurrence & the mortality from it is considerable. By rupture is meant a protusion of any of the abdominal or pelvic viscera through the walls of the abdomen either through a natural or unnatural opening. The part protuded is generally the bowel

or the bowel & the Omentum, generally the smaller bowel, but Sometimes the large bowel. Sometimes there are protrusions of the urinary bladder, ovaries, fallopian tubes or uterus, & occasionally the stomach protrudes, but this latter is very rare. When the tumor consists of bowel alone, the term *enterocele* is employed, when of omentum alone, *epiplocele*, & when consisting of both bowel & omentum it is called *entero-epiplocele*. Hernia may be reducible, irreducible, or strangulated. Every rupture is composed of several tunics called its coverings, varying in number & character according to circumstances. Every hernia has its distinct divisions into the body, base, mouth, & neck. The mouth varies in shape & extent, presenting simply as a fissure or a slit, or it may be irregular in its shape as well as in its size. In recent cases it is very small, & in cases of long standing the opening is larger. The neck is the portion lying immediately below the orifice, where is found, usually, the stricture which produces strangulation. The interior of the tumor varies in shape & size in different cases. The most common form is either somewhat globular or cylindrical; it may be conical, or bottle shaped, or

of several different forms. The circular form is very rare, as well as the conical form. Every hernial sac receives a prolongation from the peritonium, the parietal portion which does not undergo any particular change when the case is recent, but in cases of long standing, the membrane becomes thickened in consequence of deposits of coagulating lymph, & it becomes opaque & corrugated; sometimes it has much tenacity & sometimes it is ulcerated. Between the sac, there is always in strangulated hernia a certain amount of serous fluid not always limited in its appearance. This is more abundant when the strangulation has taken place suddenly in a case of recent hernia. In inguinal hernia we always find several coats; there is, the skin, superficial fascia, the spermatic fascia, the fibres of the Cremaster muscle, a prolongation from the transverse fascia, & the peritoneal investment. The causes of this disease are predisposing or exciting. A person predisposed to rupture, has the natural rings of the abdomen much larger than common. There are sometimes, preternatural apertures from partial separation of the muscular fibres. The exciting causes are such as give rise to a great amount of straining

producing pressure upon the contents of the abdomen & the pelvis through the agency of the diaphragm & the abdominal muscles.

A Hernia is reducible when the intestines or the intestine & omentum can be readily returned or slip up of their own accord. It is irreducible when replacement cannot be effected by manipulation or by posture. It is strangulated when the protruded parts are constricted by the edges of the orifice through which the protrusion has taken place. The symptoms of reducible hernia are usually characteristic; the tumor is effaceable & soft & goes up when the patient assumes the recumbent position, & when it returns, it does so with a gurgling noise. It receives an impression when the patient makes use of any exertion. It is apt to be larger soon after a meal than when the bowels & stomach are comparatively empty. When the omentum alone is in the tumor it is more solid with little or no elasticity, the tumor cannot be diminished by pressure, it has no gaseous feel & it returns with some difficulty which is never attended with the particular noise as in cases of enterocele, it receives no impulse from coughing or such exertion. When the tumor consists of bowel & omentum the symptoms will be of a mixed character.

The treatment of a reducible hernia is palliative or radical. The palliative treatment consists in the use of a retentive apparatus, a truss of which there are a great variety, the object of which is to keep the parts within the cavity of the abdomen, & prevent the tumor from enlarging. But, for the very young infant this cannot be used until the child is several months old. The patient should wear the truss constantly, especially while in the erect posture, & if a radical cure is wished by the truss, it should be worn night & day. If the hernia is large & of long standing, it is sufficient to wear the instrument during the day, removing it at night, & replacing it in the morning before the patient resumes the erect position; & two instruments should always be at hand, so that in cases of accident, the patient need not be without one. In young subjects, where the tumor is small & recent, a radical cure may be effected by wearing a well made & well adjusted truss at a period ranging from 18 months to 2 years, which is effected by a certain amount of inflammation followed by an effusion of lymph. There are several operations which have been performed for the radical cure of hernia, the best of which consists in

Scarifying the Sac & injecting some tincture of iodine into the interior of the Sac, by an appropriate apparatus like a trocar, at the same time that Compression is applied by means of a truss for 10 or 12 days. Another operation Consists in Continuing the integuments into the opening & invaginating the parts, but this is not a good operation. Another Consists in Scarifying the interior of the tumor & afterward making systematic pressure. A Hernia may be rendered irreducible by enlargement of the protruded parts, as where the bowel may become filled with fecal matter. The bowel may become injured from interstitial deposits & from enlargement of the little fatty appendages, or from hypertrophy of the omentum, or from the adhesion of the different parts to each other, or the omentum & the bowel may become adherent, or a band may form between the protruded parts & the inner surface of the Sac. An irreducible Hernia often acquires a large bulk especially the Scrotal variety, when the patient may suffer much pain. Sometimes especially during protracted illness, a tumor which is irreducible may become reducible by absorption of the band by which the tumor was connected with the interior of the Sac or otherwise. To render

As treatment more effectual, the patient should be kept in the recumbent posture, employing light diet, purgation & the use of mercurials with a view to slight ptyalism, at the same time applying sorbafacient remedies to the parts immediately affected.

Make the patient wear a suspensory truss made of gum elastic, enjoining attention to diet & keeping the bowels properly regulated.

XLIV. A hernia is said to be strangulated when the protruded parts are compressed in such a manner as to render it difficult to return them in their natural position in the abdomen, & which is at the same time liable to produce inflammation. This is effected usually at the mouth of the sac produced by muscular or tendinous fibres; but sometimes the cause of the strangulation resides in the sac & may arise from effusions or otherwise. Strangulation is usually produced suddenly in consequence of some muscular exertion when a portion of the bowel passes down & is compressed. The symptoms denotive of this occurrence are sufficiently characteristic. The patient soon after the occurrence feels a certain amount of uneasiness & pain in the part with tenderness on pressure or

exertion. Afterward the symptoms are much more violent, & the
 tenderness before existing only at the seat of the protrusion becomes
 diffused, & the bowel becomes exceedingly sensitive. The tumor itself
 is usually the seat of greatest suffering. By & by, the patient is seized
 with symptomatic fever & afterward there is vomiting; at first of the
 ingesta along with some mucus, then perhaps of bile & of bile & mucus
 and finally of stercoraceous or fecal matter. If the affection is permitted
 to progress, the symptoms assume a typhoid character. The tumor
 may give the indications of gangrene or mortification while there may
 be no pain, which effect may take place in a period varying from a
 few hours to a few days; and a case of recently strangulated hernia
 is more liable to have these consequences than where the tumor is
 of long standing or considerable size. The treatment is divided in-
 to therapeutic & operative the object being always to afford relief
 as early as possible to save stricture & prevent the formation of an
 artificial anus. Simple motion occasionally suffices for the reduc-
 tion of a strangulated hernia; & sometimes the administration
 of a full anodyne will, in the course of a few hours produce such
 a relaxation that the parts will return with little manipulation,

Or the application of a poultice, or cold or warm water, or pounded ice will be sufficient. Occasionally the reduction is effected under the influence of a slightly stimulating enema. But in the majority of instances more efficient remedies are necessary. The best posture in which to effect manipulation is one in which the head & shoulders shall be considerably elevated, & the pelvis & inferior extremities also, should be somewhat elevated. The Surgeon should sit by the side of the patient who may be lying on the edge of a bed, or upon a Couch, or upon the floor. Then take hold of the tumor at its upper part on the side of the mouth of the Sac, & endeavor with the fingers & thumb to drag it down carefully, from above downwards so as to get it from the orifice at which the Strangulation has taken place; this must be done with great care & gentleness, & at the same time, must be done efficiently. Then take into consideration the direction the protrusion has taken & make the efforts at reduction in a corresponding direction, always making manipulation in the direction of the displacement. After the bowel is replaced, enjoin rest upon the patient, & follow it up by a mild Cathartic in the course of 24 hours, or

by an enema. Produce a slight action upon the lower bowels, en-
 joining light diet &c, & the patient may have no further difficulty,
 then put on the truss & the patient may go about his regular busi-
 ness. Very often the reduction is effected with great difficulty, &
 in order to assist these efforts other means must be resorted to. If
 eligible blood may be taken from the arm from a large orifice, & the
 patient if very plethoric may be bled to syncope, & then the efforts at
 reduction must be renewed. If blood cannot be removed place
 the patient under the influence of an anæsthetic agent & the tu-
 mor may be reduced without much difficulty; unless in cases of
 too long standing, or the circumstances of the case are very peculiar.
 There are some cases where the strangulation is so tight, & the con-
 striction so severe, & the case of such long standing that replacement
 of the protruded parts is impracticable under any circumstances, &
 then the proper operation should be performed as early as possible.
 In performing this operation, place the patient under the influ-
 ence of an anæsthetic; then make an incision across the tumor.
 Before doing this first empty the bladder, then place the pat-
 ient in an available position, shave off any hair which may

be in the region of the part which is to be the seat of the operation.
 Make the incision across the tumor either vertical or oblique; a
 single or crucial incision, or any shaped incision according to cir-
 cumstances. Cut boldly, if the tumor be large & thick, through
 the skin & superficial fascia until you get to the muscular
 fibres, & then proceed more cautiously, dividing the fibres carefully
 upon a director inserted beneath the muscle or tendon, & thus pro-
 ceed until you get to the proper hernial Sac, dividing part after part,
 giving abundance of room, just as in the operation for lithotomy.
 Having thus divided the parts, when you come in contact with
 the parietal portion of the peritoneum you will find some
 serum, which is somewhat abundant when the strangulation has
 continued for some length of time. Hook through the sac with
 the utmost care & precision, pinch up a little fold, & then apply
 to this portion the point of the knife making a little opening into it,
 & if the serum escapes you are in contact with the protruded parts.
 Then insert the director, first upwards, then reversing it make
 an incision below & you get free access to the protruded parts
 perfectly exposed. Next introduce the index finger of the left hand

pass it upwards, & feel for the seat of the strangulation, & having
 found it, take a probe pointed bistoury narrow in the blade,
 blunt at the extremity & pass it up upon the finger & then divide
 the parts for ~~the~~ distance of a line or a line & a half, which will
 most always be quite sufficient, then take hold of the bowel &
 omentum, & draw them down away from the seat of the Consti-
 cition, & then the precise condition at that point can be seen,
 & if they are in the proper condition to be returned, replace the
 bowel first & then the omentum, & first that portion of the
 bowel which was protruded last gently, by steady & equal
 pressure; then bring the edges of the parts together by several
 points of the interrupted suture, carrying the needle through
 muscular fibre, tendinous fibre nearly down to the peritonaeum
 to avoid afterwards any relapse, taking care the deep portion
 of the wound unites as well as the superficial portion. Place a
 compress upon the surface of the skin, & secure it by means of
 a bandage; place the patient in bed & treat him antiphlogis-
 tically, not giving any solid food. Give the patient a full an-
 odyne to relieve pain & induce sleep, as well as to tranquilize

the bowel, until the part has gained its former tone & character. If the patient labors from peritonitis, bleed him locally by leeches use fomentations & large quantities of anodynes. After the patient has recovered from his wound, apply a truss before he resumes the erect posture. Inguinal hernia or hernia of the groin presents itself under several varieties of form. The chief varieties are hernia by the oblique descent & direct inguinal hernia. Oblique inguinal hernia is that form of rupture in which the protruded parts follow the course of the spermatic cord of the male, & the round ligament of the female. This has been called external inguinal hernia. A tumor of this kind involves the skin, the superficial fascia, the tendon of the external oblique muscle in which is situated the external abdominal ring through which the tumor emerges when there is complete inguinal hernia. The two rings are distant about 18 or 20 lines & the internal ring is from 4 to 6 lines above Poupart's ligament which is the point at which the instrument for relief must be applied, midway between the anterior & superior spinous process of the Ilium & the Symphysis of the pubic bone

Then come the fibres of the cremaster muscle, a prolongation of the fascia lata, & finally the hernial Sac.

XLV In this variety of hernia, the epigastric artery lies upon the inner side of the tumor, between its inner surface & the median line of the body, & care must be taken that it is not wounded. The protruded parts are in front of the spermatic Cord in the male; & in the female, in front of the round ligament of the uterus; but in a few cases they are in different directions. This kind of hernia is more common in the male than in the female. The disease is more common on the right side than on the left. This variety of hernia may be reducible irreducible or strangulated. The reducible form must be treated by a well constructed & well adjusted truss, to be worn more or less constantly according to the indications to be fulfilled. Such a reducible hernia may be confounded with other affections as enlargement of the inguinal glands in this region, or psoas abscess pointing above the parts ligament. When the bowel becomes strangulated, place the patient in the proper position & manipulating properly a reduction may be effected. When obliged to operate the knife must be carried obliquely upward & outwards. In recent cases the stricture is either at the

External abdominal ring, the internal abdominal ring, the mouth of the
 Sac, or at the edges of the internal oblique muscles. The point of the stricture
 we must be ascertained by the finger. When the tumor is of long standing
 & very large, the rings & the intervening Canal undergo much change.
 The internal abdominal ring is dragged down & over toward the linea
 alba so as to place itself directly above & behind the external abdominal
 ring. Then the taxis must be made nearly directly upward, & so when
 the knife is used, it must be carried directly upwards. Inguinal
 hernia may be by the direct descent, in which form it is compar-
 atively infrequent; when the bowel & the omentum pass down through
 the fibres of the transverse & external oblique muscle or just below the
 edge of these muscles, & then they carry along with them, generally speak-
 ing, a portion of the transverse fascia though sometimes this is ulcerated
 or the fibres are separated; & in other cases they pass into the external
 abdominal ring & finally emerge in this situation, lying close to the
 spine of the pubis. This kind of hernia includes the skin,
 the superficial fascia, & the spermatic fascia, or the fascia of the
 cord. The spermatic cord usually lies upon one side; generally
 upon the inside of the tumor. Then we come in contact with a

prolongation of the transverse fascia forming the 4th Conning, & then there is the proper hernial Sac. The treatment is the same as for the relief of hernia by the oblique descent. In the employment of the taxis make the efforts directly upwards in a straight line; & so likewise when using the knife for the purpose of dividing the stricture. In this case the epigastric artery is always situated upon the outside of the tumor. The Concealed inguinal hernia is an insidious form of the affection, the tumor being always small & concealed in the abdominal ring, or even at the mouth of the internal ring. The bowel may be merely intercepted, or the walls may be simply pinched, & the tumor is so small as not to be seen externally & the patient may have all the symptoms of strangulation & may die in this way. In such cases always carefully examine the regions where hernia is known to take place. If there is tenderness under manipulation which cannot be relieved by the taxis, do not hesitate to make an incision down so as to ascertain the condition of the parts. In this variety the Connings are different from the other varieties. The tumor does not make the whole descent of the Canal. When such a tumor is strangulated, you will cut through the skin, superficial fascia, & the fibres

of the external oblique muscle which form the anterior boundary of the external abdominal ring. The spermatic Cord lies behind the tumor. In performing an operation here, cut into the Canal, & then cut through the fibres of the Cremaster muscle, & then there is a prolongation of the transverse fascia & finally the proper hernial Sac the structure being usually formed at the fibres of the internal oblique & transverse muscles which overhang the protuded parts, or at the mouth of the Sac. Scrotal hernia is a continuation of the inguinal variety, which after having emerged at the external abdominal ring, passes into the Scrotum. Scrotal hernia may be inguinal hernia by the direct or the oblique descent. This variety may be Congenital or may occur at any period of life. The diagnosis is not always easy as it may be confounded with other diseases, as hydrocele, varicocele, &c. The tumor grows from above downwards in hernia, while in hydrocele it grows in the opposite direction. In hernia the tumor may be entirely soft, but it is never as elastic as hydrocele is & does not fluctuate, & if it contains air the noise is of a peculiar gurgling character. The tumor disappears as long as the bowel is reducible. The spermatic Cord is situated generally at the posterior part of the tumor or at one

Side. The testicle is situated always at the bottom of the tumor.

Scrotal hernia is more frequent on the right than on the left side. If there is any doubt with regard to the tumor, the rule is to operate with a small catanact needle, to determine its contents.

For the relief of Scrotal hernia the usual means are to be employed, making the patient wear a truss more or less constantly. If the

hernia is reducible make use of a suspensory bandage. If strangulation

takes place make an incision in the direction of the tumor, expose the parts in the usual way & the structure will usually be at the external

abdominal rings, & running the knife directly upward the object will be effected. When an operation is performed it must be done carefully.

This variety of hernia occasionally occurs at birth when it is apt to be combined with hydrocele. The truss cannot be employed at this

early period, when a compress may be applied maintained in its

place by adhesive strips & a bandage, changed frequently for purposes of cleanliness. When the child arrives at the age of 10 or 12 months a

truss must be made to fit, which must be worn constantly, & a per-

manent cure is liable to be effected. When an operation is performed

but a slight incision should be made to avoid inflammation of the

peritonium. Another variety is the Encysted hernia which is of rare occurrence. In this form the process looping in the abdominal Canal remains open & the bowel in passing down into this Canal carries with it a process of the parietal portion of the peritonium. The tumor passes behind the process of peritonium which lies between the vaginal coat of the testicle & the peritoneal cavity. In operating the vaginal coat of the testicle must be cut through to come in contact with the proper hernial sac.

XLVI Inguinal or femoral hernia takes place below Poupart's ligament. This variety is comparatively infrequent occurring when compared with the other form in the proportion of one to ten. It is more common in the female than in the male, & it seldom occurs at an early age. The internal crural ring is at the inferior portion of the pelvis in this situation. The inferior crural ring is situated upon the upper & inner portion of the thigh; the Canal being between these rings. The superior ring is somewhat ovoidal in its shape, bounded externally by the femoral vein; internally by Gimbernat's ligament; anteriorly by Poupart's ligament; & behind by the ramus of the pubic bone. In the natural state the ring is usually closed by a lymphatic

ganglion surrounded by adipose cellular substance; ^{septum crurale} The inferior femoral ring is often called the Saphenous opening. The opening is somewhat egg shaped & its edges are sharp & crescentic, especially towards the pubis. It lies over the femoral vein & the Saphenous vein. In the natural state it is closed by a ~~muscle~~ ^{lymphatic} ganglion & by a mass of cellular substance called ^{fascia} ~~cutaneous~~ ^{cutaneous} ~~bag~~. The femoral Canal intervenes between these two openings & it is usually very short, being never more than an inch or an inch & a quarter in length; its anterior wall is much shorter than the posterior wall. When the parts descend in this direction the affection is called femoral hernia. This variety may be complete or incomplete. When incomplete it passes down a small distance into the crural Canal & does not emerge into the inferior ring. When complete the tumor is always small & longer in the transverse than in the vertical direction. The tumor when coming in contact with the laminated margins of the fascia lata, steers them out of their course so as to form an angle with each other, passing upwards to Poupart's ligament. The Contents of the tumor may be bowel or omentum, or both; most frequently the protrusion consists of bowel alone.

This variety of hernia is liable to be confounded with tumors that occur in this situation. It may be confounded with inguinal hernia. It may be mistaken for a large lymphatic ganglion, which may arise from gonorrhea, from venereal disease, from cold, or other causes. When there is doubt as to the nature of the tumor, & it cannot be reduced, the rule is always to operate. The tumor formed in connection with psoas abscess often points in this direction, & there is sometimes here a varicose enlargement of the saphenous vein. In this variety of hernia in the employment of the taxis, the surgeon must proceed in a peculiar manner. When called to a case where strangulation exists, before beginning the efforts at reduction, take hold of the tumor & drag it downwards & a little inwards in order to overcome the angle which is formed. The head & shoulders of the patient should be elevated, the limbs should be flexed. The thigh must be rotated inwards & frequently both thighs must be inverted in order fully to relax the parts. Place the patient under the influence of chloroform & there will not be likely to be any necessity for cutting. When an operation is necessary it must be remembered that the structure is most commonly at Gimbernat's ligament, sometimes at May's ligament & at other points but very seldom. Carry the knife nearly in a

straight line upwards, inclined slightly inward toward the pubic symphysis, & then the parts are to be nicely divided. The parts will only need to be notched. The coverings of the hernia divided are skin, superficial fascia, the cribriform fascia, then the reflexion of the transvers fascia & finally the proper hernial sac. There will be little or no fluid in the sac as in the case of inguinal hernia. The case is here very urgent & the operation when performed should be done early. In the common reducible form of femoral hernia, a truss is used with a somewhat vertical pad. There is a variety called umbilical hernia, or hernia of the navel. This comes on sometimes immediately after birth & is more common in females than in males. In young persons, the protruded parts consist almost exclusively of intestine, or intestine & a small fold of omentum. In the adult it consists mainly of the colon & a large portion of the omentum. An immense protrusion may gradually take place, & if the hernia is of long standing & large size, half of the contents of the abdomen may be included in the parts. When it is reducible the patient should wear a truss; if it is irreducible, he should wear a suspensory bandage. If it is strangulated it should be reduced by the taxis, & if necessary by means of the knife. In

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The child especially when the protrusion is of some time, a cure may be effected by reducing the contents of the hernia & then bringing the edges together by means of several points of the interrupted Suture. The child must wear a bandage for some time afterwards until the parts are somewhat consolidated. If the hernia becomes strangulated employ the taxis in the usual manner. The operation consists in making a free incision in the parts, a perpendicular & a horizontal wound, a T like incision giving abundance of room, divide layer after layer, the skin & superficial fascia & then you come to the hernial sac which latter may sometimes be entirely absent, from being macerated, or having undergone absorption. Then introduce the finger & divide the stricture in the usual way.

[XLVII] It is supposed that in dividing the stricture of a strangulated hernia outside the sac there is less danger of peritoneal inflammation than otherwise, but the great objection to this operation is that the strangulation may not be properly divided. In performing the operation, the stricture is divided leaving the peritoneal sac intact. When the strangulation has existed for any length of time as several days this operation should be performed in the

use of the taxis, the parts are sometimes reduced without the strangulation being corrected, so that the parts are pushed up in a new situation, where the strangulation continues. This will usually be indicated by the persistence of the symptoms of strangulation, the patient not being relieved. If this is found to be the case request the patient to make efforts at protrusion, & if the parts descend, the rule is to cut down upon them, & relieve them by means of the knife. If reprotrusion does not take place, make an incision at the seat of the rupture, search for the parts & relieve them. In operating for strangulated hernia the bowel itself is often found in a bad condition, rendering it improper to return it, for ulcerative action may have taken place, or the bowel may be partially mortified, or mortified to a considerable extent: & if the bowel were returned in this condition, extravasation of fecal matter might take place, & the patient soon be destroyed by peritonitis. When the bowel is perforated, or pierced by one or more apertures small in size, seize hold of the edges of the perforation with a tenaculum, carrying it from side to side; thrust a little delicate ligature around it, & cut off the edges close to the knot; & then return the bowel. If the opening is large this procedure might restrict the bowel

so much as to prevent the ready passage of the fecal matter. Then, the
 best thing is to leave the bowel in its present situation, establish
 an artificial anus & remove the stricture if necessary. If the bowel
 be mortified as will be sufficiently indicated when existing, let
 the parts alone & establish an artificial anus. Sometimes the bowel
 will be very much discolored & there may be no mortification, but only a
 tendency to mortification. In such a case the rule is to relieve the
 stricture in the usual way, & keep the parts exposed for a short time
 under the cover of the hernial tumor, or under the cover of a soft, warm
 cloth to ascertain if the circulation will return; & when there is great
 doubt the parts may even be scarified slightly, to see if any blood is
 likely to flow, or the blood may be squeezed out gently, to see if the vessels
 supplying the mortified structures will become refilled. With regards
 the omentum, the above remarks concerning the bowel are in a
 great degree applicable. The part may be affected but not to the
 same extent as the intestine. The part will be preternaturally color-
 ed & soft, & when there is doubt the plan is to excise the protruded
 portion, taking care immediately afterwards, to ligate all the bleed-
 ing vessels, such as are likely to give rise to bleeding. After the

parts are returned, cut off one end of the ligature close to the knot, & let the other end remain. In a case of Hernia of long standing, with great thickening & induration, it will scarcely be proper to return the protruded parts, & the best plan is to excise the offending portion of the omentum & treat the case afterwards in the same manner as when omentum is excised on account of threatening or existing mortification.

Wounds of the Intestines. A wound of the walls of the bowels may occur perforating in its character, extending into the peritoneal cavity & not interfering with any of the contents of that cavity. Such a wound when merely incised, is simple in its character; but it may be complicated with hemorrhage, from wounding of the arteries in this situation. When the wound is simple approximate the edges by means of the interrupted suture; & if there is not great thickness of the walls ^{of the abdomen} by means of the twisted suture; the great point to be attended to, is that the suture shall go down, nearly to the peritoneum, otherwise the fibres of the muscle will gap & a hernial protrusion will be the result; & draw the parts closely at as many points as may be deemed necessary. If there is hemorrhage & the artery cannot be found readily; enlarge the opening, find the vessel & tie it in the usual manner.

Afterwards the patient should be confined to his bed; & after he gets up,
 the parts must be supported by a well constructed truss until they
 become consolidated. If there is a wound of the abdomen, along with a
 wound of the intestine, of a lacerated character; & if the wound in the
 intestine is over two or three lines in length, & if it is returned in this
 manner into the abdomen, extravasation of fecal matter will take
 place, & peritoneal inflammation may set up which will carry
 off the patient in the course of 36 or 48 hours. When the wound is
 only a line or so in length, there will be an eversion of the mucous
 membrane which is sufficient in many cases to effect the closure of the
 wound; but when the wound is 4 lines or over the eversion is inadequate,
 & fecal extravasation must take place. The circumstance of a wound in
 the bowel is known by the escape of gas, of mucus, or ingesta at the
 opening in the wall of the abdomen; but not always so, nor necessarily
 so. In some cases there is a discharge of blood by the anus; & if the wound
 is situated high up, the blood may pass up into the stomach & the
 patient may have vomiting of blood, & there is great shock of the
 constitution. When the bowel does not protrude, it is difficult to know
 the size or nature of the wound. There will generally be a development

of tympanitis soon after the infliction of such a wound, the abdomen
 becoming greatly distended; but this development does not always
 take place sufficiently early to institute a proper course of treatment.
 There may be a copious hæmorrhage proceeding from the wounded bowel
 itself, or some blood vessel in the vicinity may have been wounded, or it
 may proceed from a number of wounds of this kind. In this case the treatment
 consists of the application or introduction of the suture, either the interrupted
 or continued suture. Another & a preferable suture, is the suture of Semitar
 which has for its object the involution of the edges of the bowel, in such a man-
 ner as to approximate the serous surfaces, thus facilitating their adhesion
 or union. When the wound is healed there will be a septum lying in
 the tube. This is simply an interrupted suture performed in a pecu-
 liar manner. The suture must be introduced at a little distance from
 the wound about 4 lines through the surface; carry it through the sero-
 mucous cellular substance taking a firm hold; & then bring out the
 needle within about a line, or a line & a half from the edge of the wound,
 & then carry the needle across the wound, & later two stitches of the same
 kind, on the opposite side, & when the ligatures are drawn together, the
 object is effected. Place as many sutures as the length of the wound re-

quies about 4 inch apart, & cut off the ends of the ligature close to the knob.

The ligature finds its way by ulcerative absorption into the interior of the bowel, being afterwards discharged along with the contents of that tube.

The detachment of the ligature is effected at a period varying from a fortnight to 3 or 4 weeks, according to the number of the ligatures & the manner in which they are tied. After the bowel has been sewed up cleanse

it of any foreign substance, by a wet sponge, using tepid water, & after-

wards replace the bowel in its proper position, commencing always at that portion which lies nearest to the wound in the wall of the abdomen, returning portion after portion, bowel first & omentum after-

wards. After the bowel has been reduced, the wound in the wall of

the abdomen is sewed up; the patient is put in bed & carefully watched in accordance to the occurrence of peritonitis. If these symptoms ap-

pear, bleed him by taking blood from the arm, & by leeches to the

abdomen. Employ the antiphlogistic remedies to their greatest extent,

being careful not to give antimony or any purgative. Stow the patient,

bleed him, foment the parts, & in this way, assisted by the adminis-

tration of large quantities of opium, lock up the bowels & prevent

prognosis. After the bowel has been returned inflammation takes

place in the structures which have been involved in the injury.

When a wound has been inflicted in the abdomen & the instrument has pierced one or more folds of the intestinal Canal, there may be no evidence that this has taken place, & there may be no protrusion of the alimentary Canal. In such a case the wound must be enlarged by the probe pointed bistoury, then seize hold of that portion of the bowel nearest the wound, & draw it out coil after coil, to ascertain the existence of a wound, & when a wound is found, treat it in the proper manner; & this must be done even when there are no diagnostic symptoms of this character, & there may be or not symptoms of tympanitis. If the wound is inflicted by the ball of a fire arm, & there is reason to believe there are a number of wounds which are large & irregular, the case must be left alone. Treat the patient upon general principles, soothing him as much as possible. When there is a wound of the Stomach it must be treated similarly to a wound of the bowel; food being administered by the Rectum. Purgative medicines must not be given. Ice may be applied externally. Wounds of the Liver, Spleen, Kidneys, & urinary bladder are dangerous & mostly fatal. Wounds of the Bladder are always immediately fatal.

XLVIII Sometimes a portion of the spleen may protrude through a wound in the abdomen, when it should be replaced as speedily as possible; but if it is very much lacerated, it must be fixed up & allowed to remain in its position. Wounds of the bladder are difficult to manage & in such cases, a catheter should always be introduced to draw off the urine as soon as it is formed.

Artificial Anus is sometimes formed, either by ulceration or otherwise, & the patient is often subjected to annoyance especially if it is situated high up; the patient is apt to suffer from prolapse of the affected portion of the bowel. The parts are liable to inflammation. In all such cases, especially when of long standing, the inferior portion of the tube, intervening between the artificial anus, & the natural anus, usually becomes in some degree collapsed, so the fecal matter & the ingesta no longer pass along it, but are thrown off at the artificial anus, & if any do pass down, the quantity is very small. In all cases, the obstruction to the cure consists in the presence of a septum or partition, between the two contiguous portions of the bowel. The septum consists of 8 distinct layers, each portion of intestine having 4 membranes, & these two walls laying together in contact, there must be 8 layers. To effect a permanent cure, this

ridge must be disposed of. When the ridge is comparatively small, union may take place naturally, but this is rare. For purposes of cleanliness, the patient must wash himself 3 or 4 times a day, & wear a hollow truss, to receive temporarily the fecal matter; or he may wear plugs or tents, in the two orifices of the guts. To effect a rapid & permanent cure, break down the septum. This can be done by the introduction of a seton, carried up some distance into one gut & brought out at the other. The object of the ligature is to effect adhesive inflammation between the two peritoneal surfaces of the septum, which are erosive in their character. At the end of 14 days the seton may be taken out, first removing the remaining portion of the septum, when consolidation will ultimately take place. Another operation consists in the introduction of the Enterostome, or gut cutter, consisting of a pair of forceps, the edges of which are serrated, probe pointed at one extremity, & worked at the other by means of a screw. In performing the operation, pass one blade in each gut, & then the blades are firmly screwed together to make pressure to effect strangulation, during the progress of which the inflammation extends to the contiguous surfaces of the two portions of intestine, & by the time the slough is detached, the two surfaces are firmly glued together,

& this is a more elegant procedure than by the ligatures. Other operations
 may be performed for the same purpose. Having destroyed the septum,
 make systematic compression by the Compres & bandage, & propel the
 fecal matter from the upper to the lower portion of the gut, & thus
 establish the continuity of the Canal. The Ovaries are liable to in-
 flammation & all its Consequenses; to the cystiform degeneration; & the
 various heterologous formations, also to the formation of hydatids, chiefly in
 persons after the middle period of life, but sometimes occur at a compar-
 atively early age. Comparatively speaking old maids are particularly
 prone to these degenerations. Any kind of fluid may occur here in con-
 sequence of cystic formations. There may be one enormous cyst or a
 number of smaller ones, in which Case there are partitions passing in
 every direction, to form Cavities of different varieties & Shapes which may
 contain different Sorts of materials, many of which are separated
 from each other. There may be Solid tumors, encephaloid, Colloid, or
 scirrhus. These tumors are frequently difficult of diagnosis. In simple
 dropsy of the ovary, the best plan is to let the Case alone as long as possible,
 as the disease is not malignant; & as the accumulation is gradual the
 parts generally accommodate themselves, to some extent, to the

maintenance of the dropsical effusion; & but little is to be expected
 from medical treatment. At length a period arrives when the patient
 is so uncomfortable that an operation is required which consists in
 the evacuating of the fluid by the trocar; when the patient should
 be kept in the recumbent posture, & systematic compression should
 be maintained for some time to bring the walls of the cyst as much as
 possible in contact with each other; using also Cathartic medicines, &
 Erobefacients, when reaccumulation may be warded off for a certain
 time; but at some future period the fluid will reaccumulate & tapping
 will be required again & again, perhaps 2 or 3 times in the year, & at the
 end of a few years, the patient may perish. When the cyst is multilocular,
 tapping will be unavailable. Some surgeons recommend to extirpate
 the ovary in such cases. This operation is performed by the large or
 small incision. In the first operation, the incision is made from the
 ensiform cartilage, to the pubic symphysis, & sometimes the incision has
 been carried to the extent of two feet. In the other operation the small
 incision is carried from the neighborhood of the umbilicus down
 towards the symphysis of the pubic bone, a few inches in length. These
 operations are usually attended with the loss of very little blood; &

there is, comparatively, but little pain afterwards. The great danger after the operation, is peritoneal inflammation, which is liable to supervene within a few hours, or a few days, after the infliction of the wound. After making the incision, enucleate the tumor by means of the hand, down as far as its attachment to the lower part of the pelvis. Then cast a ligature around the pedicle to prevent hemorrhage, taking care to cut off one end of the ligature close to the knot, & bring out the other end at the external wound. Never operate where the tumor has formed large adhesions. When the tumor is very bulky, rapid in growth, & the health of the patient is much deteriorated, the tumor had better be left alone. In case of the cyst formation, when the patient wishes it very much, some fluid may be drawn off one day, & a few days after, the small incision may be made. After the tumor has been removed, approximate the edges of the wound by means of the twisted suture & the interrupted suture, introducing a number of stout long needles which should be carried through the muscular substance close down to the peritoneum, introducing between each two needles, an interrupted suture; place long strips of adhesive plaster from one side of the abdomen to the other & then a compress & a bandage. Watch against peritoneal inflammation,

and when it arises, treat the case the same as when it arises from any other cause.

Fractures are of constant occurrence, in every Community, at all Seasons, in both Sexes, & in all climes of Society. The bones are liable to various diseases & accidents, of the different forms liable to occur in the soft parts. A Fracture is a solution of Continuity of the bony tissue. Fractures are divided into Simple, Compound, Comminuted, & Complicated. A Simple fracture is one where, although there may be injury of the soft parts, contusion, laceration, or a wound; there is no communication with the bone & the external air. A Compound fracture is one where the opening in the soft parts communicates with the seat of the fracture. A Comminuted fracture is one where the pieces of bone are broken into a number of fragments; and a complicated fracture is one where the solution of continuity of the osseous tissue is accompanied by more or less serious injury of the soft parts, which may be bruised, cut, or lacerated; or an important joint may be laid open, or there may be rupture of an artery, destruction of nerves, & other complications which may occur in any manner. The simple fracture is usually the most easy of management & the most likely to terminate in a successful

cure. A compound fracture is more dangerous, for the bone may be exposed for a considerable length of time to the contact of the atmosphere; or the bone may have penetrated through the soft parts, & being its periosteum become covered with dirt & foreign matter. A comminuted fracture is a serious accident, because pieces are detached which will act as foreign substances, producing inflammation, mortification, or abscess, until they are finally disposed of, either spontaneously, or by the efforts of the Surgeon. A complicated fracture is much more serious than a simple fracture.

XLIX Fractures assume different directions. They may be oblique, transverse, or perpendicular, their relative frequency being in the order stated. The longitudinal fracture is very rare, but when it occurs, it is in gun shot wounds most particularly. The transverse fracture, also is very uncommon, while the oblique fracture is the most common & the most difficult to maintain. All portions of the skeleton are liable to this accident; but the long bones suffer most frequently, particularly at their shafts. The symptoms of fracture are usually characteristic. There will be pain & loss of function, with more or less tumefaction. The pain varies in its character, & in its duration, according to circumstances. Sometimes the patient is made aware of the accident, by a peculiar noise produced by

the yielding of the bony fibers. The most important symptoms are deformity, preternatural mobility & crepitation. Deformity is not always present, but only when there is marked displacement of the ends of the fragments. A fracture may occur without any displacement. Sometimes the fragments overlap each other, & there may be displacement of a limb without any fracture. Preternatural mobility is generally present except when the fracture is incomplete. There is usually, crepitation, a peculiar grating noise & sound, which is the most reliable symptom of all, especially when preternatural mobility & deformity exist only slightly, or are entirely absent. The grating which takes place, resembles that which results from rubbing together two pieces of loaf sugar or other porous substance, the noise being produced by rubbing together the ends of the fragments, & to bring it about it is necessary that the ends of the broken bone should be in apposition with each other, & there can be no crepitation when the fragments overlap each other, until extension & counter extension has been applied & the two fragments are brought into apposition. The noise can be both felt & heard. This is liable to be confounded with the noise arising from other causes, for there may be a synovial pouch in a state of inflammation, containing a considerable amount of fluid or small fibro cartilagenous bodies, & then a peculiar noise is elicited which may be

misshapen for carpalation, but it is generally more distinct in form
 the fracture takes place near an articulation, there may be some
 something similar but less distinct. The swelling usually results in part
 from an effusion of blood, if there is a laceration of some of the blood vessels in the
 vicinity of the fracture, the quantity of blood varying from a few drops to a number of
 ounces; & if some time elapses after the occurrence of the injury there will be
 swelling from an accumulation of coagulating lymph & from an increase in the
 size of the vessels. The ends of the fragments are liable to be displaced from
 various causes; & among the most important are Muscular action; the
 weight of the limb, or of the body; & the vulnerating body itself. In an oblique
 fracture, the muscles as a general rule, produce the displacement of the frag-
 ments. The weight of the body, or the weight of the limb may displace the
 parts as is evident in fracture of the Clavicle. The vulnerating body may pro-
 duce displacement, by thrusting the fragments asunder, as when a blow is
 given on the nose. The Causes of fracture are predisposing or exciting.
 The predisposing Causes have reference to the Constitution of the osseous tissue,
 when a trivial exciting Cause will produce a fracture. Various diseases pre-
 dispose to fracture as Secondary or Tertiary Syphilis, which often renders
 the osseous tissue extremely brittle. In Cancerous diseases the same

circumstances occur. Fractures are liable to occur in softening of
 the skeleton. Persons debilitated from long courses of mercury may become
 predisposed to this occurrence especially if they have been suffering from
 Syphilis. Old age is a predisposing cause when the bony matter occupies
 the place of the soft substance & the osseous system becomes extremely brittle.
 The exciting causes are muscular action & external violence, the latter however
 being the most common cause, which may be produced by a fall, by a blow, or
 by a kick from an individual or an animal. A broken bone is repaired in prin-
 ciple, the same as the process in a wound of the soft parts. There is inflammat-
 ion, with the outpouring of coagulating lymph & the organization of this substance.
 The blood effused is absorbed, but this is not effected all at once, because im-
 mediately after such an occurrence, inflammation is set up in the bone & in
 the surrounding soft structures & the absorbent vessels must be kept in a state
 of abeyance so as to interrupt their functions & some days may thus elapse before
 the effused blood is disposed of. If the ends of the fracture have been carefully
 brought together this process of reunion will go on more rapidly, & if the
 ends are permitted to separate to a greater or less extent a much longer
 time will be necessary to effect this end, & yet reunion is not impossible.
 As nature proceed in her process of absorption & inflammation, plastic

matter is poured out in the first place around the ends of the fragments, between the fragments & the periosteum which is always separated to a greater or less extent, & the lymph gradually becomes harder & harder, until at length it is replaced by bone precisely like that which exists in the ends of the fragments or in any other portions of the bony skeleton. The lymph serves merely as a medium or receptacle for the deposit of the substance. If the system of the patient is in a bad condition, or if the case is improperly treated, nature will be thwarted in her efforts, & much time may elapse before consolidation will be completed. The matter thus formed resembling the natural bony tissue is denominated the callus of the broken bone. It encloses the ends of the fragments & it remains a certain length of time to perform a certain purpose, to connect the ends together, & consolidation having taken place the callus is gradually removed, having become useless. It has therefore been called the provisionary or temporary callus. There is an internal definitive callus which is slower in forming than the external callus, for between the ends of the fragments there is comparatively but little effusion of coagulating lymph & finally there is but little bony matter secreted here. In proportion to the accuracy of the apposition will be the small size of the external callus. In certain parts of the skeleton there never is a provisional callus, &

very seldom a definitive Callus, as is seen in the neck of a thigh bone, in the bones of the skull, in the acromion process of the clavicle & the olecranon process of the ulna. The reason on account of the great difficulty in effecting apposition of the ends of the bone & on account of the presence of more or less Synovial fluid, & also because the vascular supply is cut off in a great measure, & when lymph is poured out, it is small in quantity & does not undergo transformation as readily as in other parts of the skeleton.

In treating fractures; bring together the ends of the fragments & maintain them in this way by appropriate apparatus; the first object is accomplished by extension & Counter extension along with Coaptation; & the second, by the application of bandages & splints. By extension is meant the force necessary to remove the inferior from the superior fragment; & by Counter extension the force necessary to prevent the upper part of the limb or body from being drawn away & drawn down by the extending force. In fractures the extension is usually made at that portion of the limb which is articulated with the inferior fragments, & the Counter extension is applied not directly to the upper fragment, but higher up. The Surgeon should proceed as cautiously as possible & as to inflict no undue pain in the part, nor any undue violence. The extension should be made slowly &

gradually, first in the direction of the displacement, & afterwards in the direction of the axis of the limb. If the fracture be a severe one, or the patient timorous & nervous, first place the patient under the influence of an anæsthetic, & when it is possible to do so, set the limb as speedily as possible, losing no time, even when the parts are in a state of inflammation & in a state of considerable tumefaction, at the first visit to the patient.

When called to a case which has been neglected for some time the Surgeon must not wait to reduce the inflammation before he attempts the setting of the limb. A most thorough examination should always be instituted so as to establish a satisfactory diagnosis.

L Great deformity is often produced by the overlapping of the ends of the fragments. This is usually the result of muscular contraction. There is an angular displacement, generally when the fracture involves the neck of the long bones, when the head & neck are placed at a right angle with the shaft of the bone. It is generally formed by the weight of the body & the manner in which the fracture occurred. Occasionally the fragments are displaced in a lateral position, & the inferior fragment generally rotates upon the superior. There is also an impacted fracture when the neck of the bone is driven into the shaft, & then there will be

generally, deformity & shortening, but the patient (if the fracture is in a lower extremity) will generally be able to walk after the accident. Sometimes the fracture occurs in other portions of the bone when one extremity is driven into the other. The examination should always be made in the most thorough & careful manner. The examination should always be made as speedily as possible & if there is any doubt as to the matter the Surgeon should call in proper Counsel. Various means are employed to maintain the Contact of the broken bone. It is proper, in all cases, to set the fracture as early as possible, without any delay, even if some time has elapsed after the occurrence of the injury, & even when there is a great amount of injury; for where this is neglected there will be greater danger of severe inflammation. In applying the dressings be careful not to inflict great injury on the parts & make allowance for the resulting inflammation & the consequent tumefaction. These dressings should be carefully watched. The bandage is employed merely to moderate the resulting inflammation, & by controlling the muscular action, to control or prevent Spasm in the part. The bandage should be applied in all Cases of fracture where it is possible to use it, applying it lightly at first & more firmly afterwards. The bandages are most commonly composed of Muslin or

linen, or of fine wool, but whatever material is employed its edges or
 rough border must be armored; & the bandage should not be made of
 flimsy, thin material, but it should be rather stout & firm. The bandage
 should be firmly rolled. For this purpose take hold of one end & roll it up tight
 & then roll the rest tightly in it. The bandage should be applied always
 from the distal portion of the affected extremity; & if a great amount of
 swelling is anticipated in a superior extremity, each finger as well as the
 limb should be involved in a distinct bandage, & then another & larger
 bandage should be continued up as far as necessary. The bandage must
 be applied equally & uniformly in circular & reverse turns. For the pur-
 pose of preventing motion in the affected parts, splints of various kinds
 are employed. A good splint may be made of common pasteboard as in
 fracture of the lower jaw bone, thick pasteboard, dipped in hot water, &
 then moulded to the parts. Another variety of splint is made of binder's
 board, thick, & cut into a proper shape, length, & width, which can be ac-
 curately moulded to the part. This will answer in fracture of the fore-
 arm, & in many cases of fracture of the lower extremity. Another
 variety is the felt splint, which is rendered hard, firm, & elastic, by gum
 shellac, & by plunging it in warm water, it may be accurately moulded

to the part. Another substance is wood, which is employed constantly, when it is necessary to keep up extension & counter-extension in the part. Three Splints vary in size according to circumstances. Ten Cases are used a great deal for splints. For the purpose of waiving off pressure from three splints, there should be introduced between them & the parts to which they are applied pads, or cushions, or Compresses, which may be made of muslin, linen, or Calico simply rolled up, or made into bags, & filled with chaff, Sawdust, cotton, moss, or something of that kind. There is another contrivance occasionally employed to maintain extension, & that is Common adhesive plaster when the injury done to the soft parts is so much as not to permit the application of the splint ordinarily employed. The dressings should be changed from day to day until the danger from inflammation has subsided applying them loosely in the first instance & more firmly as the treatment progresses. The main object in all Cases is to prevent deformity & to maintain as accurate an apposition, between the ends of the fragments, as possible. After a certain period has elapsed from the time the injury has been inflicted, it becomes necessary to institute passive motion in the contiguous joints or there may be rigidity or permanent ankylosis. Remove the dressings, wash the limb well, & place upon it some mild

Stimulant to stimulate the absorbent vessels to absorb the coagulating lymph.
 Then move the limb gently. The time at which this should be done will
 vary according to the circumstances of the case. When the cure is complete, take
 off the apparatus, & continue the passive motion until the parts originally
 affected & those secondarily involved are all healed. (Do not permit the patient
 to get up as soon as the splints are taken off (in fractures of the lower extremi-
 ties) but after a while let him move gradually about the room on his
 crutches, & afterwards, when able, let him go out occasionally into the
 open air. The antiphlogistic treatment must be employed to some extent
 in any case of fracture. In cases of Compound fracture where there is a wound
 in the soft parts, communicating with the broken fragments, the object is to
 convert the fracture into a simple fracture, by approximating the edges
 of the wound in the usual way & then treat the parts antiphlogistically.
 Employ Sutures & adhesive strips to promote reunion & in this way cover
 up the extremities which have been exposed. Sometimes the ends of the bone
 project & are engaged by the soft parts, muscle, tendon or skin. In such
 cases endeavor to effect reduction by extension & counter extension, & by the
 use, if necessary, of the probe pointed bistoury. It occasionally happens
 that the bone thus projecting is denuded of its periosteum, & very sharp,

& that this portion is covered to some extent with dirt so fine that it cannot be got rid of. In such a case it may be necessary to cut off a little portion of bone, to put it in proper shape, & thus be able to effect better apposition, but always save any projecting portion of bone, if possible. A fracture may exist in complication with a dislocation & then the rule is always, to reduce the dislocation, before the fracture is set. A fracture is occasionally complicated with the lesion of an important artery, or a large vein. The hemorrhage may be open in its character when there is a wound, or it may be concealed, a large quantity of blood being effused among the muscles, or between the muscles & the broken bone, or between the skin & the muscles. When this is the case, it may be necessary to apply the ligature, especially if the hemorrhage proceeds from an open vessel. If there is reason to believe, from the character of the hemorrhage, that a large artery has been laid open, & the blood has not an opportunity of passing out, the best plan is either to cut down through the parts, & seek for the bleeding vessel, or to make an incision over the main trunk of the artery supplying the affected part & to apply the ligature there. When the blood proceeds from a vein, it can generally be arrested by systematic compression. Sometimes the bone is comminuted, & when the pieces are separated, they will act invariably as foreign bodies, & may produce abscess or extensive in-

inflammation, & therefore, the rule is always to remove these portions of bone, especially when the fracture is compound. A fracture may be accompanied with great laceration, there may be a wound, a joint may be laid open, the bone may be extensively comminuted, the main artery or nerve of the limb may have been at the same time lacerated or injured, & in such a case, the accident is of a serious character, likely to destroy the patient if an attempt is made to save the limb, the patient perishing from the violence of the resulting inflammation, or from profuse suppuration, hectic fever, or from some other cause. If the fracture is comparatively slight, an attempt may be made to save the limb, especially if, at the time of receiving the injury, the patient was in good health, of temperate habits, & when the weather is not likely to be harsh, & when there is no likelihood of erysipelatous inflammation & tetanus. When amputation of the limb is decided upon, the rule is to perform primary amputation waiting until the patient has recovered from the effects of his injury; & the limb is amputated when reaction has taken place; & if there is a tendency to mortification, the operation should not be delayed for the appearance of the line of demarcation. When an attempt has been made to save the limb, & extensive suppuration has taken place, & the patient is likely to be destroyed by hectic fever, constitutional irritation & by the progress

drain established upon the System; cut off the limb to save the life of the patient. Fractures occasionally fail to unite from various Causes, which may be local or Constitutional, or both Combined. Among the local causes of the want of union are incorrect apposition of the ends of the fragments of the bone. It may occur from blood, or something else lying between the two ends of the fragments of bone, which the Surgeon may not be able to prevent.

Another Cause is the Continuance of Cold applications for a long time, which are often used as Antiphlogistic agents, which may interfere with the reparatory process in a nervous individual, the resulting inflammation being insufficient. Or the patient may have lost a great deal of blood at the time of the injury, & the part & the System may have become impoverished; or the Surgeon may have employed leeching & the lancet to too great an extent. A person may have Syphilitic disease, or scurvy, or a Scrofulous condition of the skeleton interfering with the reparative process; or he may have been subjected to a protracted Course of mercury, & the System may have become enfeebled, both in the soft parts & in the skeleton. Many Surgeons think the occurrence of pregnancy a sufficient Cause for want of union. Fractures occurring in old persons will, other things being equal, unite with more difficulty than fractures occurring in young Subjects; and fractures in old

prisons, in certain portions of the skeleton never unite by bony matter.

II. The union may be postponed for several weeks or months according to circumstances. Sometimes this occurrence is delayed by the injudicious application of the bandage. When the want of union is protracted, the end of the broken bone are rounded off, & a sort of artificial articulation is formed between them. When there is reason to suspect, that want of correct apposition is the cause of non-union, this must be endeavoured to be corrected by bringing the ends of the bone carefully in contact, & maintaining them in their position by appropriate dressings. If the interposition of a piece of broken bone is the cause, it must be removed if possible, especially when the fracture is a compound one. If the health of the patient is in a state of derangement, endeavor to rectify it. Occasionally the cause is inappreciable & then the patient must be treated on general principles. If the case is likely not to do well after the expense of 4 or 5 weeks it is a good plan to apply pressure along the ununited extremities by means of a compress & a binderboard splint, binding them together by means of a roller. If this does not answer, try a solution of the tincture of Iodine, or some stimulating Surface-facient Liment such as Granville's Lotion, or Soap Liment along with the tincture of Iodine; or a blister may be employed. Another operation which may be

performed, consists in rubbing the ends of the broken bone upon each other; First place the patient under the influence of chloroform; take hold of the portions of the limb articulated with the fractured ends, & rub these ends together to elicit irritation in the vessels of the affected parts, to induce them to pour out the requisite quantity of Coagulating Lymph; then place the limb & the part in proper dressings. Another operation consists in acute puncturation with the proper instruments, which should be carried down between the ends of the fragments to break up the morbid adhesions between them. Or a delicate trocar with a cannula maybe introduced & the point carried about in different directions to break up morbid adhesions, & afterwards there may be easily introduced through the Cannula some Stimulating fluid, as the tincture of Iodine. Or the Galvanic fluid may be applied directly to the part & thus stimulate it. In Cases of a more protracted character the best plan is, especially after the ordinary measures have failed, to resort to the introduction of a seton. For this purpose the patient must be placed under the influence of an anæsthetic, & then making the extension & counter extension to draw the extremities asunder, take a needle about 8 or 9 inches in length & spear shaped at its extremity, armed by a piece of ribbon, muslin, linen, or Calico well oiled, & pass it between the ends of the

broken bone. In performing this operation do not carry the instrument through any important structures, such as a large artery, nerve, or vein. This foreign substance must be retained for a certain length of time. Occasionally the instrument cannot be passed between the ends of the broken bone, & then it is to be passed as close to the ends of the fragments as possible. The inflammation ensuing must be kept within moderate bounds. From the patient, keep him at rest, & immediately place the limb in appropriate apparatus & treat the case upon antiphlogistic principles. If the case is of long standing the instrument must be retained for several weeks, unless there is infiltration, or great constitutional disturbance when it should be removed; but if this does not take place, it should be allowed to remain until suppuration has been reestablished. Another operation is that of excising the ends of the broken bone which will be particularly necessary when the case is of long standing & the ends of the bone have become tipped with fibrous matter, or fibro cartilage. This operation being not without danger should only be performed when absolutely necessary. Another operation consists in piercing the ends of the broken bone by an awl shaped instrument. Make a little incision through the skin & carry the instrument down to the end of the broken bone, & pierce these ends in different directions, passing the

instrument also between the edges of the bone, to break up any adhesions that may exist there, but this mode of treatment is only adapted to cases of recent standing. Fractures of the Nose. The nasal bones are liable to be fractured from falls, kicks, or blows, which are frequently Compounded or complicated. The fracture is always made by direct violence. The fracture is frequently driven back into the nasal cavity, & unless properly attended to the result will be serious deformity not admitting of any remedy. The treatment consists in moulding these bones, putting them into proper shape, which can always be readily done by the fingers, & therefore, proper instruments are necessary, of which the best is the female Catheter passed up into the nostril in the direction of the displaced bone, brought in contact with the inner surface & then the bone is raised up to its proper level & afterward moulded into its shape by the thumb & finger, while Counter pressure is kept up by the Catheter in the cavity. When the tendency is to recede or become depressed again, the proper plan is to take a stout adhesive plaster, as of buckskin, & pass it from one side of the cheek to the other cheek directly across the bridge of the nose, taking care that the bones are first properly moulded to their natural shape. After the plaster takes a firm hold it is impossible for the fragments to become depressed again. Never under any circumstances

introduce any foreign substance into the nasal cavity to maintain the parts in their proper position. If the case has been complicated with a wound, the wound must be treated upon general principles. If there is serious hemorrhage, the nostrils may have to be plugged for a day or two. If there is concussion or a serious injury of the brain, it must be treated upon general principles. When the inflammation is severe, employ bleeding & the ordinary antiphlogistic remedies. The Lower Jaw bone is liable to be fractured in any portion of its extent. In the young subject it usually gives way at the symphysis. Generally speaking, fractures of this bone are the result of severe injury. The fracture may be oblique, transverse, or perpendicular; it may be simple, compound, comminuted, or complicated. The teeth frequently suffer very seriously, being sometimes wholly detached, & at other times partially loosened. The most common seat of fracture is the body of the bone. However indeed, the seat of fracture is usually easily detected, there being all the ordinary phenomena & frequently irregularity in the dental arch. When the teeth are loosened or thrown out of their sockets, the rule is to preserve them if possible. If the fracture is situated, at the body of the bone, at the symphysis or at the ramus, a simple mode of treatment will suffice to maintain its position. A good splint to be employed, is a piece of pasteboard, long

Enough to reach from one side of the jaw to the other, & long enough to ex-
 tend from the Hyoid bone to the chin, or a little beyond it. Encase this splint
 in a piece of muslin or patent lint & apply it to the affected part, & maintain
 it afterwards by a bandage. A piece of gutta serena may be used properly
 moulded to the part, to form a sort of bag to receive the bone. This must
 always be confined either by a roller, or by straps & bandages & buckles. The
 object is to keep the inferior teeth in contact with the superior teeth.
 During the progress of the treatment the patient will be unable to masti-
 cate food, & he must be fed upon slops, broths, milk, & crumbs of bread & milk,
 & quail, tapioca, Sago, gellies & similar articles which may usually be intro-
 duced without any difficulty into the mouth even when the teeth pre-
 serve their integrity. Under no circumstances remove a tooth for the purpose
 of introducing nutriment into the mouth. When the fracture involves the
 alveolar process, especially when it is of the comminuted character, there
 will be difficulty in maintaining the ends in contact, & then a good rule is
 to get a skillful dentist to apply gold or silver wires to the contiguous teeth;
 or a Silversmith or a dentist, may fasten between the teeth a piece of silver
 having the shape of the jaw & the cheeks this contrivance, holding the parts
 firmly to each other, & sooner a perfect cure may not result.

LII. A Fracture at the neck of the bone is difficult of diagnosis on account of its deep Situation, being Covered by muscle & the parotid gland, but it may usually be determined by taking hold of the bone, pressing the thumb upon the dental arch within the mouth & grasping the body of the bone on the outside, at the same time, the finger is applied at the supposed point of fracture, & drawing it forwards & backwards, crepitation may be perceived & felt, & there is much more mobility than there would be in a case of dislocation. In treating a fracture at this point, two Compresses must be applied, one behind the angle of the ramus in the gutter formed by the jaw bone & the Sterno, cleitomastoid muscle; & another on the outside extending from a short distance below the angle of the bone, to some distance above the Glenoid Cavity; & these should be Confined in their position by appropriate Contrivances, taking particular Care to make proper Compression. *Fracture of the Clavicle.* The clavicle is liable to give way at different portions of its extent, most Commonly at its middle, a little towards the acromion process of the Scapula. This fracture is usually oblique. The Symptoms are characteristic; & the fracture may almost always be determined by the attitude of the

patient. The shoulder of the corresponding side is depressed, & thrown forward & inward lying nearer the sternum than it does in the natural state, which is due in a great measure to the weight of the corresponding limb. The inner fragment usually maintains its position, though it may, on some occasions, be drawn upwards. This fracture usually unites in the course of $4\frac{1}{2}$ or 5 weeks sooner or later depending much upon the age of the subject. The patient is unable to perform the functions of circumduction, except when there is little or no separation of the fragments. This fracture occurs at all periods of life. In the treatment the object is to throw the shoulder upwards, outwards, & backwards in the direction opposite to that of the displacement, & to retain the parts in this position by appropriate apparatus. It is generally necessary to make use of a wedge shaped pad, long enough to extend from the arm pit to within a short distance of the elbow joint & the base should always lie in the axilla. It should be about 4 inches in width & from $1\frac{1}{2}$ to 2 inches in thickness. At its base at each corner is a tape by which it is tied to the body, one end passing in front & the other behind the chest & tied beneath the other axilla. Care must be taken that it slip backwards from the axilla, & to maintain

tain it more securely it is well enough to Confine it by a few turns of the roller. Confine the limb afterwards by means of a roller several inches wide, commencing the application directly across the pad. The limb should be so placed that the fingers of the hand should point to the opposite Shoulder, the elbow lying in front of the chest. After a while change the turns to the perpendicular direction, passing down in front of the limb & underneath the elbow. An appropriate apparatus has been made in the form of a sleeve supplied with several strings by which it may be Confined in different directions. There are other apparatuses for this purpose.

Fractures of the Scapula, though seldom occurring, may take place in any portion of its extent. There is generally a slight elongation of the limb the arm being drawn away from the shoulder joint, when the acromion is fractured as is most commonly the case. There is a flattening of the shoulder joint & deltoid muscle. To determine the diagnosis trace the spine of the Scapula towards the clavicle. Or, take hold of the arm at the elbow & raise it to its proper position, & bringing the ends of the fragments together, elicit crepitation. In this variety of fracture the same apparatus is employed in its treatment as is used in fractured clavicle dispensing with the axillary pad lest the arm be thrown out

far outward & not yield adequate support to the depressed acromion
 process. The union here is generally fibrous or fibro ligamentous, & a long
 time elapses before any union takes place at all & the bandage must be
 continued for 8 or 9 weeks & even longer. In fracture of the neck of the
 bone which is so rare that its very existence has been denied, the Glen-
 oid Cavity & the Coracoid process are drawn downwards & the Superior ex-
 tremity is elongated from 1/2 an inch to an inch; the shoulder is flattened
 & the injury assimilates a dislocation of the shoulder joint, & a fracture
 of the neck of the humerus which are the accidents with which it is like-
 ly to be confounded & from which it may be distinguished by a careful
 Examination, as to the outline of the acromion process which will be found
 to be unusually prominent & to maintain its integrity. There is an elong-
 ated condition of the Superior extremity. Taking hold of the elbow, & turning
 the limb forward towards the acromion process, the parts can be brought
 to their natural position; There is more motion than is present in dislo-
 cation. Respiration may be present to a greater or less extent, but it is
 usually comparatively slight. The same process is used in the treatment
 as in the fractured Clavicle, including the pad. Fracture of the
 Coracoid process is very infrequent & can only take place in conse-

quency of violence applied directly to the part. In the treatment, the
 object is to bring the limb in such a position as to relax the pectoralis,
 Coraco-brachialis, & the short head of the biceps muscle & enable the pro-
 cess to be brought in its proper position. The limb should be brought in
 the position directed in fracture of the clavicle & thus sustained. At the
 same time a compress may be employed directly over the Coracoid process
 which should not be confined too firmly lest the bone be compressed below
 its natural level. It is not necessary to apply the pad in the axilla.
 Fracture occasionally occurs at the inferior angle of the Scapula us-
 ually from external violence. There will be pain, contusion, often around
 & the fracture may be compound or comminuted. To establish diagnosis
 take hold of the inferior angle of the bone with the thumb & finger very
 firmly & push the humerus upward so as to move the top of the Scapula
 Or take hold directly of the acromion process & move it; if there be a
 fracture, the lower portion of the bone seized by the thumb & finger, re-
 mains stationary, while the upper portion will move upon it. In the
 treatment of this fracture apply two Compresses, one along the axillary
 border of the Scapula & another along the vertebral border, or between
 the border & the spinous processes of the vertebrae, a broad & thick

compresses. Then the arm must be confined to the side of the trunk as in the previous Cases, dispensing with the pad.

LIII The ribs are liable to be broken, generally by direct violence applied to the part, but sometimes by force applied indirectly. The upper ribs being in some degree protected by the clavicle are less liable to fracture than those below, & the 11th & 12th ribs are said to be less liable to fracture than the others; but all the ribs are liable to be fractured; & one or a number may be broken. Sometimes the ribs are broken by lateral pressure. The fracture is most liable to occur at the most convex portion of the ribs, although it may take place in any portion. The symptoms are usually sufficiently characteristic. In the 1st place; the patient usually complains of great pain, aggravated by a deep inspiration & by coughing. Indly. Crepitation can be observed by placing the finger over the seat of suspected injury & making the patient take in a full inspiration, & there may be some irregularity in tracing the outline of the rib. If the patient be very corpulent or very muscular & if the fracture is seated far back there may be difficulty in determining diagnosis, as there will be less displacement & the fracture will be seated rather deeply. When there is ~~doubt~~ in relation to the Case, the symptoms are

Severe, the rule is always to apply dressings similar to those employed when it is certain that a fracture does exist. The displacement is usually outwards or inwards. The fracture may be transverse or oblique, Simple, Compound, Comminuted or Complicated. Sometimes the sharp end of the fragment is driven in so as to wound the Costal & even the pulmonary pleura, & even the lungs so as to give occasion, sooner or later, to emphysema.

When the case is thus Complicated, there will be likelihood of pleuritis or pleurisy, & pneumonia & there will be an irritating & spasmodic Cough. There may be an injury of the intercostal artery & there may be more or less copious hemorrhage. In the treatment of these fractures, the great principle to be observed, is to make the patient breathe by the diaphragm so as to render the intercostal muscles very passive, not allowing the slightest degree of motion, especially when there has been lesion of the pleura, or the lungs, or both. For this purpose employ a broad bandage aided by a compress. Or take a stout piece of muslin long enough to encircle the body several times, confining the ends afterwards so as to accomplish the intended object. The object may be accomplished by means of a piece of broad adhesive plaster, Carried round the body so as to encircle it & thus the requisite degree of pressure may be made,

But the great objection is that the adhesion strip may prove irritating to the skin, leading occasionally to the development of suppurative inflammation. A good plan is always to apply a compress directly over the seat of fracture, especially when there is an external displacement. The compress may be broad but small & concentrated. To prevent the cloth or bandage from slipping it should be confined by means of a Scapulars, two pieces of roller crossed over the shoulders like a pair of suspenders, attaching the extremities behind & in front. If the patient has a cough give tartar emetic & morphine. If the patient has symptoms of pleurisy &c, it will be necessary to treat him antiphlogistically, taking blood from the arm & by purging him; giving antimonials along with anodynes & restricting him in his diet. When the dressings are deranged they should be replaced. The patient should be confined to his room for several weeks. If emphysema occur, just beneath the skin, it will be readily relieved by making a few punctures. If air should accumulate in the corresponding thoracic cavity so as to compress the lungs & impair their respiratory functions it may become necessary to puncture the thoracic cavity to enable it to escape. If there is a wound of the intercostal artery & the case be a compound one, seek for the vessel & apply the ligature; &

if this cannot be accomplished, endeavor to control the hemorrhage by systematic compression. Any loose pieces of bone should be removed.

The Sternum is occasionally broken, either transversely or obliquely & sometimes partly perpendicular. The injury can occur only in consequence of direct violence. A portion of bone is frequently driven in toward the chest, & sometimes the ends of the fragments are separated a considerable distance from each other. Such a fracture may be followed by severe inflammation of the chest; & sometimes the patient perishes from the injury inflicted, either soon after the occurrence, or at a period more or less remote. The nature of the injury can be discovered by tracing the outline of the sternum with the finger. If there is no displacement of the fragments, by placing the finger on the seat of injury, & letting the patient take in a full inspiration, crepitation will be perceived. The treatment is the same as in fracture of the ribs. Fracture of the Pelvic bones is occasionally met with, but the injury is always of a complicated nature, & can occur only in consequence of violence directly applied to the part. It is usually complicated with severe injury of the soft tissues & sometimes with injury of the pelvic viscera & generally of the skin & muscles in this situation. In consequence

of the injuries sustained the lesion is generally fatal. It is not always easy to determine the existence of fracture in this region. It is necessary in the treatment of such an affection to pay particular attention to the condition of the soft parts, moderating the resulting inflammation as much as possible by the employment of antiphlogistics.

Little can be done as far as the fragments themselves are concerned.

If there is marked displacement, something may be done by means of a compress & a girdle, but generally very little can be done by bandages.

If there has been injury of the urinary bladder, introduce a catheter into the organ to carry off the urine as soon as it is passed into the bladder.

Fractures of the Spine are occasionally met with & may occur in any portion of the vertebral Column. In such a case life is destroyed almost on the instant, if there is more or less injury sustained by the spinal marrow & its membranes. The fracture may involve any portion of the bone. If it takes place in the cervical vertebrae above the 4th bone, the patient generally perishes in an instant in consequence of the suspension of the functions of the spinal nerves. If the injury occurs below the 4th cervical vertebra, the patient may live for some time, but he will be likely to have paralysis of the superior extremities.

ties, & perhaps also of the inferior extremities & he may live a number of days.

When a fracture occurs in the dorsal vertebrae, there is always paralysis of the inferior extremities & of all that portion of the body below the seat of injury. There will be great constipation of the bowels, & the development of a large quantity of gas forming an immense tympanitis. The urinary bladder being paralysed, the urine must be drawn off several times a day, by the catheter. The same circumstances occur when the injury takes place in the lumbar vertebrae. Very little can be done by surgical interference in fracture of the Spinal Column whenever occurring. The best plan, generally, is to let the patient alone, treating the case upon general principles, taking care the resulting inflammation shall be kept, as much as possible, within proper limits. When the lamella of the bone is depressed, the trephine may, in some cases, be applied to endeavor to remove the piece of bone & relieve the compression. When the spinous processes are fractured & there is no external wound, place a compress along each side of the affected structure, & confine the processes by means of adhesive strips. Should the bone be broken, & there is an external wound, the rule is to remove the piece. Fracture of the Coccyx occasionally takes place. It sometimes

happens in women between the age of 35 & 40 in parturition, or from a kick, or a fall. Little Can be done except to bring the edges in apposition by inserting the finger into the Rectum so as to place the parts upon their natural level. Keep the bowels in a soluble Condition & introduce every other day an injection of Cold water or a slightly stimulating fluid while the upper bowel is kept in a confined Condition by a dose of Morphine. Do this for 12 days or a fortnight.

Fractures of the Humerus may occur in any portion of the extent of the bone, most frequently at the Shaft & about or near its middle. When fracture occurs in the Shaft of the bone it may be distinguished by the deformity of the limb & the inability in its use. The inferior fragment is usually drawn inward although not necessarily so.

Be this as it may, the limb is generally somewhat shortened & crepitation can be elicited. In the treatment the great principle is to give freedom to the elbow, allowing it to hang down so as to draw the inferior fragment downwards. The arm may be confined to the trunk & the patient should carry the forearm & hand in a sling, but the elbow should not be confined. Two Splints answer for this purpose, one applied along the inner portion, & the other along the outer portion, confined by means of a bandage carried

from the fingers. The two splints are generally of birch's board with the edges bevelled off. The internal one should be long enough to extend from the inner condyle as high up as the axilla & sufficiently broad to extend nearly half way around the limb, & mould its shape by plunging it in warm water. Before it is applied it should be wrapped in a piece of cotton, muslin, or linen, the object being to ward off pressure, & prevent the parts from being chafed or irritated. Before the splints are applied, the limb should be enveloped from the fingers up, & if there is great danger of swelling each finger should be placed in a separate bandage as well as the thumb. The bandage should be extended up by Circular & reverse turns as high as the shoulder, & it may be crossed in front & behind to Confine it more firmly. Then apply the splint & Confine it by the remainder of the bandage. The arm is to be Confined to the trunk by a separate bandage. Then support the hand & forearm in a sling giving plenty of room to the elbow & the parts may be well, without deformity, in 5 or 6 weeks. When a fracture involves the Superior extremity of the bone, there occur all the ordinary phenomena. This fracture is liable to be mistaken for dislocation & a Careful Examination is always highly necessary. To do this take hold of the elbow with one hand, & of the Superior extremity of the bone with the

finger & thumb of the other hand, & moving the elbow, crepitation may be elicited. If there be no fracture the Superior extremity will move in consonance with the inferior extremity. Sometimes, the head of the bone is broken off, & at the same time, dislocated down into the axilla, or upon the anterior portion of the chest, & the bone is immovably fixed there, the limb usually standing off from the body in a strained Condition. In treating this Case, two splints, as before, must be employed

LIV When a fracture occurs near or at the joint there will be more or less inflammation within it, & consequently such an accident if ever so judiciously managed will be a long time in getting well; & as the treatment progresses, permanent ankylosis must be avoided by instituting passive motion. Very much the same dressings are required as when the fracture occurs at the shaft of the bone. Confine the limb to the side of the body, the hand & forearm being carried in a sling. It is not necessary to insert a pad into the axilla. When the fracture of the head of the bone is complicated with a dislocation into the axilla it is a serious accident seldom occurring; but in all such Cases, the rule is to reduce the dislocation before the fracture is adjusted. If the reduction of the dislocated head cannot be effected, it should be allowed to remain in its new position, & then

The Superior extremity of the inferior fragment should be brought up if possible into the Glenoid Cavity; by instituting passive motion the under fragment may be rounded off, & thus, partial motion be restored. It may be a good practice in such a case to cut down upon the part & replace the head of the bone in its former position & connect the ends of the fragments properly together. Fractures of the Condyles of the humerus are not uncommon. They may occur in or around one or both condyles, the fracture extending into the joint, or not extending into the joint; or there may be two fractures separating the two Condyles from each other. In consequence of the great proximity of these injuries to the elbow joint, there is usually inflammation of the Synovial membrane, apt to be followed by an effusion of plastic matter, which, becoming organized, is apt to tie together the articulating surfaces leading to Ankylosis of a permanent character. The diagnosis is generally sufficiently easy, unless there is much tumefaction & much pain. In the treatment of these fractures the limb had better be placed in the bent position, as it is best calculated for the maintenance of the ends of the fragments in apposition, throughout the whole of the Case. The best application, in these Cases, is a tin splint or Case consisting of two pieces, which is adapted to the shape of the limb. The

limb must be bandaged up from the fingers by circular & reverse turns; & then the Case should be applied; the whole limb being afterwards supported by a broad Sling extending from the fingers, to within a little beyond the elbow joint. The tin Case should extend, on the one hand, nearly up to the axilla, & on the other hand, nearly to the end of the fingers. The splint is secured to the parts by means of a bandage. Another apparatus is the rectangular splint, employing one on each ~~splint~~ side secured by appropriate bandages. As the treatment progresses, the splint may be moved a little on a pivot, gradually bringing the limb in a straight line. During the treatment passive motion must be instituted, taking off the dressings very frequently & keeping the limb in a proper manner so as not to disturb the position of the fragments, washing the limb, & applying to it some stimulating liniment. Sometimes it may be necessary, from the inflammation, to apply leeches to the joint. The Case must be treated on general principles, guarding the parts, as much as possible against inflammation, & when inflammation takes place, guarding against adhesions, breaking them up gradually, by passive motions. The bones of the forearm are liable to be fractured in any portion of their extent, & one or both may be broken at the same time. The radius is more frequently

fractured than the Ulna. Such fractures are usually recognised without the slightest difficulty. In the treatment of fractures of the shaft of the bone whether involving one bone or both, the great object is to prevent the ends of the bones from falling in, into the interosseous space. To prevent this, make use of a splint by which the interosseous space shall be compressed; Or a thick long Compress may be employed, laid directly over the interosseous space. The best Splints are two pieces of Shingle or similar substance which should be firm enough, so as not to be softened from the applications made in consequence of inflammation. The splint should be long enough to involve the fingers, the object being to prevent motion of the wrist, or of the fingers, keeping them perfectly rigid, Confining the Splints by means of appropriate bandages. The forearm should be placed on the breast at a right angle with the humerus. The forearm is afterwards Carried in a sling during the whole treatment. The ulna is liable to be fractured at the olecranon, which is liable to be snapped off & broken either by muscular action, or violence applied directly to the part. This fracture rarely unites by bony matter, as it is difficult to maintain apposition of the ends of the broken bone, & because there is an effusion of Synovial fluid, & on account of the Supply of blood being cut off, from the Superior fragments.

LV. In treating fractures of the olecranon process, the limb must be kept in the extended position, so as to relax the muscle inserted in the upper fragment & control it to some extent until consolidation has been completed. To maintain the limb in this position a splint must be employed upon the anterior surface, long enough to reach from the middle of the arm to the corresponding portion of the forearm & several inches in width, properly padded & confined by an appropriate bandage. Previous to this application, the upper fragment must be drawn down & placed in proper position towards the inferior fragment; & to keep it in this position, advantage may be derived from the application of adhesive strips 15 or 18 inches long, the centre of the strip being firmly applied to the upper extremity of the lower fragment, & the extremities are crossed in front of the forearm a short distance below the elbow joint. To secure this approximation still more accurately, apply in addition a compress, usually a long one, placed in contact with the upper fragment & secured by means of a bandage extending from the fingers up, nearly to the axilla. Then place along the anterior portion of the limb the splint so as to render the elbow joint perfectly immovable & passive during the whole of the treatment. In this accident there is always danger of inflammation in the artic-

ulation; & this should be kept within as moderate limits as possible during the treatment, to prevent the effused lymph from producing rigidity of the articulation, & this is to be done by instituting at a comparatively early stage of the treatment, passive motion. Fractures of the inferior portion of the Radius are of frequent occurrence. The fracture often extends into the interior of the joint, & the fracture may exist a short distance above the joint, or a little higher up. In this kind of fracture the symptoms are much the same as those of dislocation of the wrist joint. The end of the bone may be drawn forward & inward, upward & backward. The fracture may be complicated with dislocation of the joint. When there is dislocation, the reduction may be effected with little or no difficulty, as there is no great muscular resistance. Very frequently there is marked displacement produced by the separation of the ends of the fragments. In the treatment of the different fractures occurring in this situation, the same dressings answer for all. An appropriate splint has been made for this purpose by Dr Bond of Philada. which answers very well. The ordinary splint may be employed when this is not at hand, & slipping off the extremities so as to counteract any tendency to displacement either backwards or forwards. In the

first place always apply the bandage. After a certain period the dressings must be taken off, the limb washed well, & rubbed with some counterfricant liniment, & passive motion instituted. Besides the limb each individual finger must be taken hold of, & its joints moved also.

The bones of the Carpus are broken occasionally, always from injury directly applied. The fracture is generally complicated in its character, & often so severe as to occasion necessity for amputation; but an attempt should always be made to save the part, unless the injury is of such a serious character as to be likely to be attended with the worst consequences, if the attempt be made. The object should be to convert, if possible, the fracture into a simple one, by using adhesive plaster &c. It may be necessary to apply leeches & various liniments to control the inflammatory action; the limb should be kept in an elevated position, & the parts kept at rest. If the bones are displaced they should be pushed back into their natural position, which object can be accomplished by the fingers. Fractures of the metacarpal bones occasionally occur, especially of that bone which sustains the little finger. Whether the fracture involve the 5th or any other metacarpal bone; in the treatment the object is to use two splints, one along the back part & the other along the anterior portion

of the bone, extending from the inferior half of the fore arm. Or a curved splint may be employed, stretched along the palmar aspect of the limb, & then apply a small pasteboard splint directly over the seat of the injury, taking care first, to apply a small compress or a piece of cotton over it to ward off pressure, & then binding the parts together approximations effected & maintained. Fractures of the fingers & thumb may occur occasionally & at any point. The treatment consists in employing two splints; one long enough to extend from a little beyond the wrist to the extremity of the affected finger, moulded as far as the finger is concerned to the affected finger; and another splint (both pasteboard splints) on the back of the hand which may be broader than the other if the case requires it.

LVI. In some cases of fracture of the inferior end of the radius, when there is a tendency to displacement, it may be necessary to apply a compress to keep the fragments of bone in their proper directions.

A Fracture of the thigh bone may occur in any portion of its extent, most frequently in its shaft. Fractures of the body of the bone may occur at any period of life & are generally the result of violence directly applied to the part. The symptoms are generally well marked

being such as occur in fractures in other portions of the skeleton. The fracture may be displaced in different directions or it may be impacted. The object of the treatment in all cases is to keep the bones as accurately as possible, in correct apposition during the whole of the treatment. To accomplish this important object, the case must be carefully watched from time to time especially in the early part of the treatment, to ascertain if the dressings are properly applied & whether the parts are in apposition. The dressings should not be changed oftener than is absolutely necessary. If there ever occurs the slightest displacement, it must be remedied if possible, no matter how often it takes place. In the treatment of this fracture it is customary to place the limb in the extended posture, & to keep up extension & counterextension during the whole of the treatment. The fracture is generally oblique. In the treatment of fractures involving the inferior extremities, the patient must be confined for a certain time to the recumbent posture. Therefore the bed should be attended to. Never place the patient on a bed provided with a sacking bottom & bed cords; but it should be provided with slats. Then procure a good mattress of soft material, such as cotton moss, or horse hair. Place over the mattress a sheet & secure it by means of tacks

to different parts of the bed so that it will not slip. The pillows should not be too high. As the patient will be unable to rise for the purpose of evacuating his bowels or bladder, The slit Corresponding with the buttocks should be wider than the rest, & in the Centre there should be a wide opening; and also in the mattress & sheet a portion over the opening in the shape of a pad, correctly fitted which may be removed when necessary & the vessel being placed under the opening evacuation may take place without any danger of soiling the bed clothes. The patient should always have at hand a urinary. When the accident has occurred some distance from his dwelling, & the patient has to be Carried home, the best plan is always, when possible to Carry the patient upon a furniture Car, in the bottom of which is placed one or two mattresses, a sheet & several Comforters, & the patient should be driven very slowly. When the distance is short, he may be Carried on a settee, a door, a large shutter, or something of that kind. In Carrying the patient up stairs, two persons should stand on each side of the patient, & passing their arms across the shoulders, behind the buttock & under the belly, they should grasp each others hands making the sailor's grip. Then two other assistants should support the lower extremities.

A proper apparatus should be procured to maintain Extension & Counter Extension during the whole of the treatment. The bed should be prepared & the dressings placed upon it in the position & order in which they are to be used before the patient is placed in bed. If the fracture is simple the apparatus may be discontinued in the course of 5 or 6 weeks, but the time depends upon circumstances, in the mean time instituting passive motion in the knee at about the end of 3½ or 4 weeks sooner or later according to circumstances. At the end of a few weeks the patient may use the starch bandage & walk upon Crutches.

LVI. In all fractures of the inferior extremities, the bandage should be employed, usually extending from the toes upward by circular and screw turns. In compound fractures of the thigh & leg, a circular bandage is made use of, the bandage of Scultetus. In certain kind of fractures the flexed position of the limb will be most advantageous & the leg should be placed over an inclined plane. Fracture of the neck of the thigh bone within the Capsular ligament, is almost peculiar to old people, is most common in the female, & it is usually the result of slight Causes. It is characterized, 1st By

Evulsion of the limb, 2nd By Shortening, varying from $\frac{1}{2}$ to $1\frac{1}{2}$ & even 2 inches according to Circumstances 3rd There is always approximation of the great trochanter to the crest of the ilium 4th There is less prominence on the great trochanter than natural; & there is more fullness in the hip than is perceived on the opposite side. There is difficulty in flexing the limb upon the pelvis. There is a change in the character of the arc of the trochanter major. By keeping up extension & counter-extension, & bringing the parts in apposition, crepitation will be elicited. In this variety of fracture there is rarely any bony union, & if there be any union it is by a fibrous or fibro cartilagenous substance. In the treatment, if the patient is old, feeble, & worn out, the best thing is not to apply any apparatus, but to place the patient in bed, & allow him to remain with the limb lying on an inclined plane made of pillows, bolsters, or something of that kind so as to make the limb as comfortable as possible. When the patient is in good health & comparatively robust, the injury should be treated the same as fracture of the shaft of the thigh bone. When the fracture is on the outside of the capsular ligament, there will be less evulsion, shortening & displacement of the trochanter major. This fracture occurs at

any period of life & is generally the result of violence directly applied to the part, & is attended often with severe contusion of the soft parts. The treatment is conducted the same as fracture involving the shaft of the bone. In fracture of the great trochanter there is slight eversion of the limb but no particular shortening. The upper fragment is drawn upwards to the crest of the ilium & backwards to the sacrospinous notch. By drawing the fragment to its natural position & bringing it in contact with the part from which it has been separated, & then rotating the limb upon its axis, joint crepitation may be elicited. In the treatment place the limb in the straight position, confining it by the proper apparatus, & place a compress directly over the broken portion of bone, & confine this by means of a girth or girdle placed around the hips. When the trochanter minor is broken off it is drawn upwards, & to enable a cure to take place, the limb must be placed, so as to relax the muscles, over an inclined plane, that the foot may rest higher than the remainder of the limb; & the parts may be maintained by applying a compress in the situation of the trochanter & confining it by an appropriate bandage. In fracture of the inferior extremity of the bone, the inflammation will extend into the joint & may produce

permanent ankylosis; & the injury requires great skill in management for the accident is often complicated. The inflammation should be reduced by the employment of antiphlogistics. If the joint has been laid open, & the bone comminuted, it may be necessary to amputate in order to save the patient's life. In the treatment of these fractures, make use of the straight position, especially when the condyles are involved, to enable the tibia to serve as a splint. In some cases where the fracture is above the condyles, the double inclined plane may be resorted to. During the treatment when there is tendency to shortening, it should be counteracted if possible, & careful manipulations should be instituted at different times.

IVTH. Fracture of the Patella is occasionally met with as the result generally of muscular contraction & sometimes of violence applied directly to the part. The fracture may be vertical, oblique or transverse, generally transverse. The fracture may be comminuted. In the vertical fracture there is usually little or no displacement, but the fragments may be slightly separated from the action of the muscles. In the transverse fracture the upper fragment is always drawn up so that there is a gap directly in front of the knee joint which can be increased by flexing the limb. In the oblique fracture the displacement

is usually considerable, but it may be very slight or entirely absent. When perpendicular, the fracture unites in the same manner as fractures in other parts of the body, by bony substance. In a transverse fracture the union is fibrous or fibro-ligamentous in its character. The treatment consists in keeping the four-headed extensor muscle in a complete state of relaxation throughout the whole treatment. A straight splint is employed properly padded & secured by an appropriate bandage. Apply the roller from the toes as high nearly as the knee, extend the leg upon the thigh, & bend the thigh upon the pelvis & then draw down the upper fragment to get it in contact with the inferior & confine it by long & broad adhesive strips, the first being applied a short distance below the head of the fibula, & brought above the superior fragment & place it in a semicircular form. The next strip is placed in the opposite direction, & a number of others to hold these more securely. Then take a long narrow ^{compress} ~~piece~~, & apply it over the superior fragment immediately over the upper ~~fix~~. Then apply the splints; but first the roller should be carried up across the knee in the form of the figure 8 & then continue the application as high as the groin & secure the splint to the back part of the limb. Place the splint on an inclined

plane, that the foot may be higher than the rest of the body. In about two weeks & a half passive motion should be instituted; & in 6 or 7 weeks take off the splint & allow the patient to walk upon his crutches, & the part may be supported by an apparatus made of gum elastic & leather.

The bones of the leg may be broken singly or in union with each other. The symptoms are usually characteristic. The Cause is usually violence directly applied; but sometimes it is the result of muscular contraction when the bones have undergone some degeneration. The fracture may be Simple, Compound, Comminuted or Complicated. Fractures of the shaft of either bone may be easily remedied unless they are very oblique. When the fracture is unusually oblique & involves the middle of the bones there is apt to be anterior displacement. In the treatment of fracture of the tibia & fibula all that is necessary is to counteract the action of the muscles by the bandage & a tin splint consisting of two pieces, one corresponding with the leg & the other with the foot, being shaped to the limb. When the fracture is transverse or nearly so, bandaging the limb in the usual way up to the knee, apply a padded splint & secure it to the limb by means of a bandage, passed around the knee, around the leg & around the foot.

If the fracture be oblique it will be necessary to maintain extension & counter extension by appropriate apparatus until Consolidation has been effected. When there is tendency to anterior displacement, this should be counteracted by means of ~~two~~ splints of binder's board or thick sole leather, properly shaped to the limb to extend nearly from the knee to the ankle joint, well padded & secured to its place a compress being applied over the projecting end of bone. Attention should be paid to the position of the heel which should not be depressed too much & for this purpose employing Compresses, or having a corresponding excavation in the splint. This treatment must be pursued no matter where the fracture occurs. When only one bone is affected, the displacement will be comparatively slight as the other bone serves the purpose of a splint & there may be no necessity to maintain permanent extension & counter-extension. The leg must always be on a line with the inner margin of the patella. Occasionally there is a fracture at the ankle joint when the limb has a tendency to rotate inwards & the foot is inverted. The inflammation of the ankle joint must be attended to, & passive motion should be instituted at the end of 12 or 15 days, which should be continued until long after the splints have been taken off. When

There is little injury in the soft parts, endeavor to maintain apposition of the ends of the fragments by a few strips of adhesive plaster Carried directly across the seat of fracture; & Carrying the bandage from the toes up, & when opposite the fracture apply a Compress over it, & pass the bandage across the ankle & insert in the form of the figure 8 & then place the limb in the tin Case & tie the parts properly. The fibula is occasionally broken off a couple of inches above the ankle when the foot is always inclined outwards. In the treatment the foot must be kept in an inverted Condition, & maintained thus during the whole of the treatment making use of appropriate dressings Consisting of a wedge shaped cushion extending from the knee to the ankle, & over this a splint long enough to reach from the upper part of the Cushion to a few inches below the Sole of the foot.

LIX. The apparatus is placed along the inner Surface of the limb & then enveloped in a roller in the ordinary manner. When there is not much displacement the tin Splint may be used with advantage. When there is a Compound fracture of the inferior extremity, the wound must be treated upon general principles, making use of the fracture box with movable Sides & employ the brass dressings, When the wound is

Such as to prevent the application of the extending gutter adhesives strips maybe employed with great advantage. The Astragalus maybe broken generally in consequence of a fall from a considerable height. It maybe fractured obliquely or transversely, & there is apt to be serious injury of the articulating extremities of the bones of the leg. The fracture will be attended by the ordinary symptoms, the breadth of the articulation being greater than in the natural state. The treatment must be conducted upon general antiphlogistic principles; then the parts must be moulded, & placed in a tin case. Fracture of the Calcis is rare, it maybe the result of direct violence or of a violent contraction of the gastrocnemii muscles & other muscles. The bone is usually broken midway between the attachment of the tendo achilles & the articulating surface of the Astragalus. The treatment must counteract the tendency of the foot to extension using a splint placed along the anterior portion of the limb, embracing the inferior portion of the leg & the dorsal surface of the foot, & then secure the upper fragment in contact with the other by adhesive strips extending around from one side of the limb to the other. Then make use of a tolerably large & thick Compress carried along the foot & secured by means of a roller carried nearly to the knee. The roller

Should be applied first & then the Splint should be confined by the remainder
 of the bandage. During the treatment slight passive motion should be
 instituted. In about 6 weeks take off the dressings & put on a Slipper
 having a ring attached to its heel portion & secure this by means of a
 cord or suitable bandage to a strap secured upon the inferior portion
 of the thigh & let the patient use a crutch. When the bones of the
 tarsus are broken there will be but little displacement & they may
 be replaced by careful manipulation. When small pieces of bone are de-
 tached, they should be removed as soon as possible after the occurrence
 of the injury. Apposition should be maintained by keeping the foot &
 the leg in a state of repose. Fracture of the metatarsal bones are
 usually complicated with severe injury of the soft parts & it is generally
 necessary to amputate the foot but this member should be saved when
 possible. The bones are sometimes bent, generally in chil-
 dren, & is usually peculiar to the bones of the forearm & they are occa-
 sionally met with in other portions of the skeleton. Under ordinary
 circumstances, this cannot take place in adults. The bones are
 usually curved forwards & sometimes the accident is complicated
 with partial fracture. The treatment consists in making slight

extension & counterextension, to straighten the limb which is to be done by manipulation & pressure, & then the limb is to be confined in the usual way as for fracture. If there is much difficulty in effecting replacement, endeavor by antiphlogistics to relieve the inflammation & enable the bones gradually to resume their natural position.

The Starch apparatus consists in applying the starch bandage aided by means of splints. With this apparatus the patient is able to go about on crutches in 8 or 10 days. The toes & heel should be left bare to show the condition of the limb from time to time. In fractures of the inferior extremities it is necessary to have some apparatus to ward off pressure from the bed clothes.

IX. A Dislocation involves a change in the relative position of the articulating surfaces of a bone. This displacement may be complete or incomplete, primitive or consecutive, recent or old, simple, compound, & complicated. By an incomplete luxation is meant a partial loss of the apposition of the articulating surfaces. In the complete form there is a perfect separation of the articulating surfaces. In most dislocations, there is a little separation produced after the accident has occurred by the contraction of the muscles, in the

immediate neighborhood of the affected parts; & this constitutes consecutive dislocation. A dislocation is said to be old when a considerable period has elapsed since its occurrence. A compound dislocation is one where there is a wound in the soft parts communicating with the joint; & a complicated dislocation is one where there is great injury of the soft parts ^{where it is} or attended with fracture of the bones. Nearly all the articulations are liable to disarticulation, but those which admit of a great variety of movements are most prone to be thus affected. The most common of all is dislocation of the humerus down into the axilla. The direction of the dislocation varies according to the nature of the affected joint. In the orbicular joints, displacement may be upwards, downwards, backwards, or inwards. In the ginglymus joints, there is dislocation backwards & forwards, & towards each side or laterally. Dislocations are not liable to occur with equal frequency at all periods of life. It is seldom found before the age of 18 or 20 years; & in old people dislocations are not so common as fractures. The period of life most subject to dislocation is from 30 to 50 years of age. A simple dislocation involves merely a displacement of the ends of the bone from each other without any wound or serious complication.

in the soft parts. The Causes of such an accident are violence applied directly or indirectly to the parts, & muscular Contraction. Certain circumstances predispose to the occurrence of dislocations, as preternatural laxity of the ligaments connecting the articulating Surfaces together, Caries of the joints, paralysis of the muscles, varied or flexive Motions, & shallowness of the articulating Surfaces. The Symptoms of a dislocation are, 1st, want of crepitation; 2nd, elongation or shortening of the limb; 3rd The lodgement of the head of the bone in an unnatural position; 4th Change in the shape of the joint; 5th, diminution or loss of motion; 6th, Change in the axis of the limb; 7th, possibility of feeling the bone in its unnatural position; & 8^{thly}, pain, numbness, & swelling. Soon after the occurrence of the injury there will be more or less blood found in the joint & in the surrounding parts, which is generally, comparatively trifling, & is soon disposed of by the adjacent vessels, especially when the Case is properly managed. There may be extensive extravasation into the joint, & into the neighboring parts, owing to the laceration of some large blood vessels. There is also a rupture or laceration of the ligaments of the affected joint, unless there has been a preternatural laxity of the ligaments of the joint

& frequently a rupture of the tendons, & sometimes of the muscular fibres in
 the immediate vicinity of the affected surface. In the treatment of a
 dislocated limb, we make use of extension & Counterextension & of
 Coaptation. After the reduction, place the limb at rest & use anti-
 phlogistics to moderate the resulting inflammatory action. The great
 Cause which generally resists the reduction of the bone is Muscular Con-
 traction, & the object must be to Counteract this tendency; which may
 be done sometimes by diverting the patient's attention, & surprising
 the muscles themselves, throw them off of their guard & then make the
 proper movements rapidly. In the great majority of instances other
 means must be employed, by placing the patient as soon as the
 parts have been thoroughly examined, under the influence of ether
 or chloroform, allowing the patient to lie down & then proceed to
 the reduction. In the next place employ extension & Counter-
 extension, & these powers must be exerted in the most gentle &
 gradual manner possible. The extension should be made, first
 in the direction of the displacement, & afterwards as the parts yield
 in the natural axis of the limb. The hands of assistants may be
 sufficient for this purpose, or bands & fillets may be resorted to.

After the reduction, a long time will elapse before the parts will regain their natural tone, & very frequently the patient suffers more after a dislocation, than he does after a fracture. After a few days, gentle passive motion should be instituted, & no efficient liniments should be made use of; and as the case advances a good treatment is to pour hot water on the parts & immediately afterwards cold water & then to rub the parts with a dry napkin. Complicated dislocations should be treated on the same principles as complicated fractures. When the dislocation is compound, it should be converted into a simple one as soon as possible, drawing the parts together by adhesive strips & covering them with collodion. In cases where the position of the soft parts prevents the reduction, the opening must be enlarged. When there is a fracture complicating the injury, the dislocation should be reduced before the fracture is set, whenever it is possible to do so. A good plan is to set the fracture temporarily, surrounding the limb with splints sufficiently strong to support it, & then taking hold of the limb, effect the reduction, & then taking off the apparatus reapply it properly & permanently. Old dislocations are frequently met with, & they are exceedingly perplexing.

It must depend upon apparent & existing circumstances whether the reduction of an ancient dislocation should be attempted. A dislocation of an orbicular joint is more easy of reduction after some time has elapsed since the occurrence of the accident, than a dislocation of a synovial joint. When a bone has been out of joint for some time, it forms a new & imperfect socket for itself, & it contracts new adhesions to the surrounding parts, owing to the effusion & subsequent organization of lymph, & the old socket becomes, in a measure filled up by coagulating lymph which may be converted into fibro-cartilage, or even bone. The rule is always to proceed in the most cautious & careful manner in all such cases.

LXI Dislocation of the lower jaw. The bone may be dislocated on one or on both sides, constituting a single or a double dislocation, & the most common form is the double dislocation. Displacement may take place in consequence of muscular contraction, or violence applied to the chin, when the mouth is wide open, but usually it occurs from muscular contraction. The symptoms are always characteristic; the lower jaw is immovably fixed, the patient being unable to close his mouth, & the lower jaw is thrust in advance of the superior; the cheeks are flattened & there is a sort of ridge

lying between the ear & the eye, & there is a depression immediately in front
 of the ear, the temporal muscle is rendered very tense, the saliva trickles
 constantly from the mouth, & the patient has difficulty in swallowing
 & in articulating. In the single dislocation the jaw inclines over to the
 opposite side. The dislocation is easily reduced. If it is a double dislocation
 seat the patient on a low stool or on a low chair, stand in front, & let an
 assistant behind hold the head against his breast. Introduce the thumbs
 in contact with the molar teeth of the lower jaw; placing at the same
 time, the fingers along the anterior portion of the jaw on the outside.
 While depressing with the thumbs the posterior part of the jaw so as to un-
 latch it from its situation, elevate the anterior portion, & in this way
 the reduction is effected, making a fulcrum of the thumbs. When the
 dislocation is only on one side, the introduction of one thumb will be
 sufficient. After the reduction, the patient should live abstemiously for
 a number of days, & the mouth should not be opened too widely. Sub-
luxation of the lower jaw is observed in females of a lax habit of
 body, & but seldom in the male. It consists in an elongation of the con-
 necting ligaments, allowing the lower jaw to slip forwards & downwards
 a little beyond the intra-articular cartilage. It is attended with some

difficulty in closing the jaw with Considerable pain. In its reduction proceed much in the same manner as when there is dislocation of the Condyle.

The jaw should be placed in a bandage & the patient should be put upon the tonic treatment, while great Caution is to be observed with regard to mastication. Dislocation of the ribs is very rare; but sometimes the

ribs are separated from the cartilage, & the treatment is the same as for fracture of the ribs. The Clavicle is occasionally separated from its connection at

either articulation. Dislocation at the sterno-clavicular articulation may occur forwards, upwards, or backwards. The forward dislocation is usually

produced by a fall upon the shoulder the shoulder being at the same time, thrown somewhat backwards, & slightly elevated. The symptoms are character-

istic. There is generally great difficulty in effecting Consolidation, & the dislocation is therefore seldom restored, & there is immense difficulty in maintaining apposition, although it may be easily placed in its proper Situation.

The treatment is the same as for fracture of the Clavicle. A number of adhesive plasters should be employed cropping the articulation in different directions, & over this a Compress, the whole being confined by a proper bandage.

The dislocation upwards is extremely rare, & the symptoms are characteristic & the dislocation backwards is also very rare. The treatment of these varieties

is the same as for the other variety. Dislocation of the outer extremity of the clavicle is more frequent than dislocation of the internal extremity, & the bone may be displaced in several directions. Most commonly the scapular extremity of the bone is thrown over the acromion process. This is caused by violence applied directly to the parts, & the symptoms are always characteristic. To reduce the dislocation place the fist in the axilla, & taking hold of the arm just above the elbow, bring the limb forward & upward so as to thrust the head of the bone against the acromion process; & afterwards it is maintained by placing a wedge shaped pad into the axilla & confining the limb in the same manner as in fractures of the clavicle. Occasionally the scapular extremity is thrust downwards & then the parts are interlocked & there is an approximation of the shoulder towards the median line. All the symptoms are characteristic. The treatment is the same as in the other form of the accident; & so also when the scapular extremity lies under the coracoid process, which it does very seldom. Dislocation of the shoulder joint is exceedingly common. The head of the humerus may be drawn from the glenoid cavity in three different directions. These 3 forms are complete, & there is another form which is incomplete, when the head of the humerus is thrust forwards & a little downwards towards the coracoid

process, the bone lying slightly in contact with the glenoid cavity. The most common direction is down into the axilla. The head of the bone may be thrown forward against the chest so as to lie immediately below the clavicle, underneath the pectoral muscles; & in the 3rd form it may be thrown backwards & downwards so as to lie below the spine of the Scapula, between the infraspinatus & teres minor muscles. In the dislocation down into the axilla the head of the humerus is thrown completely from the glenoid cavity. The limb is elongated from $\frac{3}{4}$ in. to an inch. The limb usually stands off from the body, the fore arm being flexed upon the arm, not wholly but semi-flexed; & the hand is nearly midway between supination & pronation. There is rigidity of the articulation, great flattening of the shoulder joint & there is an unusual prominence in the situation of the acromion process with a hollow immediately below it; & the head of the humerus may be felt in its unnatural position. The accident usually happens by the patient falling forwards & receiving the weight of the body upon the palm of the hand, the limb being placed widely from the body; but it may also be produced by a blow or otherwise. The reduction is usually easily effected, especially in recent cases. There are several methods of effecting this reduction. One is by means of the knee in the patients axilla. Another consists in the

operator placing himself opposite to the patient, & the object is to make counter-extension with the heel in the axilla, the boot having, of course, been removed, having first administered an anæsthetic. This is the best mode of operating, though others have been recommended. The head of the bone may be thrown forward against the chest, & this occurs generally from a fall, or a blow, when the limb is separated from the trunk with the arm bent at the elbow. In this case, the arm is shortened. The head of the bone can generally be felt in its unnatural position just below the clavicle. The reduction should be conducted on the same principles as in the former case, but the extension should be made first backwards & downwards, & then the limb should be approximated, gradually, to the side of the body.

The head of the humerus may be thrown backwards upon the dorsal surface of the scapula, & the arm lies across the anterior portion of the chest, the limb being somewhat shortened. This accident only occurs when the patient falls, with his hand and arm thrown forward across the chest & it is a rare occurrence. The head of the bone can usually be felt in its unnatural position. The reduction is effected by extension & counter-extension, making the extension across the chest, while an assistant steadies the top of the shoulder. In the partial dislocation the symptoms are not as well

marked as in complete dislocation, but they are generally sufficiently evident. The injury is reduced by extension & counter-extension, with slight pressure upon the head of the dislocated bone. After the dislocation has been reduced, keep the limb confined in a sling for some time, not allowing any motion for a number of days, lest there be a reproduction of the difficulty. When there is difficulty in effecting reduction, it may be necessary to employ the pulleys; & for this purpose the patient should be placed horizontally, & the limb should be secured in such a manner as to steady the shoulder. Then a fillet must be secured, either immediately above the wrist, or to the lower part of the arm, just above the elbow the forearm being flexed, & this should be applied by means of a wet roller; & the extremities of the extending band must be secured to the pulleys.

LXII

The elbow joint may be dislocated in different directions. The bones of the forearm may be displaced backwards, forwards, & to either side externally or internally. The most common dislocation is that in which these bones are drawn backwards, so as to rest on the inferior surface of the humerus. The olecranon process is thrown out of the cavity which naturally receives it & places itself opposite the inferior extremity of the humerus some distance above the joint so as to form a projection. The Coranoid

process is received in the hollow which naturally accommodates the olecranon process. In consequence of this, the fore arm is flexed nearly at a right angle with the arm. It likewise stands off in a peculiarly awkward position, generally somewhat pronated. The tendon of the three headed extensor muscle is relaxed & rendered unusually prominent. There is an unusual prominence in the bend of the arm formed by the Condyles of the humerus; at the same time there is a flattened condition of the bend of the arm; & the anterior brachial, and two headed flexor muscles are in a state of extreme tension. The distance between the elbow & the wrist joint is materially diminished. This form of dislocation is exceedingly common & liable to be mistaken for fracture. The reduction of this dislocation in recent cases is very simple, but when the accident is of long standing over 3 or 5 weeks old, in the generality of cases, it is almost impossible to effect reduction in any manner. To reduce it, take hold of the patient's hand, or of the forearm just above the wrist, the patient sitting before you; with the other hand, take hold of the arm about its middle, & at the same time, place your knee into the bend of the arm, making of the knee a fulcrum. While making flexion & counterextension bring the bones downward & inward presses with your ~~hand~~ knee outward & in a few seconds the parts will slip

in their natural position. And the probability of it is possible to do. So. Occasionally the ulna alone is dislocated & thrown backwards upon the humerus so that the fore arm is bent nearly at a right angle with the arm & the hand is in a state of pronation, the olecranon process being very prominent. The symptoms are characteristic & the reduction is effected in the same manner as when both bones are displaced. A dislocation of the bones of the forearm forward can only occur as a general rule when there is also a fracture of the olecranon process. Then the fore arm is in a state of extension, & there will be great tension of the broad extensor muscles behind, & relaxed condition of the flexor and anterior brachial muscles. The reduction may be effected by extension & counter extension the limb being in the straight position, & pressure being made upon the ends of the bone at the bend of the arm in a direction opposite to that of the displacement. A lateral displacement is occasionally met with, when there is usually a certain amount of flexion. The nature of the injury may be ascertained by the projecting head of the ulna or of the radius, the joint will be flattened and its rotundity lost. It may usually be reduced by extension, counter extension & pressure. The radius may be displaced alone at either extremities. It may be displaced at its superior extremity;

inwards or forwards, ~~the~~ backwards. The forward dislocation is the more frequent of the two, in which case the head of the bone rests against the articulating surface of the condyle & the limb is in a state of partial supination, while the forearm is in a state of partial flexion. When the head of the bone is thrown backwards it rests upon the posterior surface of the outer condyle & the limb is in a state of partial pronation. To effect reduction make extension & counterextension & press the head of the bone in a direction opposite to that which it has assumed in consequence of the displacement. The radius may be thrown off from its articulating surface with the ulna at the wrist joint forwards or backwards. When thrown forward against the anterior surface of the ulna, the limb will be in a state of partial supination & there will be a prominence in front of the articulation, & the opposite circumstances occur when the bone is thrown backwards. The reduction is effected in the same manner as in previous cases. Dislocations of the wrist joint may occur alone or in combination with fracture of the radius, or the ulna, or both. The Carpal bones may be dislocated backwards, forwards, or laterally. In the forward dislocation, upon the anterior part of the joint is a prominence produced by the projection of the Carpal bones; & upon the dorsal surface there is a vacancy. The reduction is easily

effected by slight extension & counter extension & pressure upon the displaced
 carpal bones. Dislocation of the carpal bones is very infrequent, & is caused by
 violence. The reduction is effected by pressure, maintaining the parts
 afterwards by appropriate dressings. There is occasionally a dislocation
 of the fingers or thumb, usually at the Carpo-metacarpal articulations.
 The posterior phalanx of the finger overlaps the anterior extremity of
 the metacarpal bone, the palmar surface of the former resting on the dorsal
 surface of the latter. Dislocation rarely occurs at the other articulations.
 These dislocations, especially when involving the thumb are often very
 perplexing, on account of the resistance of the ligaments by which the
 joints are connected. In making reduction, make counter extension at
 the wrist, while extension is made by taking hold of the distal portion of
 the thumb & fingers, as the case may be, & inclining the dislocated bone
 towards the palm of the hand make the efforts downwards in that direc-
 tion. The fillet or a similar instrument may be used for this purpose
 when necessary. In certain luxations of the thumb, it is almost impossible
 to effect reduction, on account of the manner in which the parts are
 involved. When this is the case some of the parts may be divided sub-
 cutaneously by a delicate instrument; care being taken afterwards to treat

the case on general principles. Dislocations of the inferior extremity. The most common dislocations at the hip joint are four in number; one upwards & backwards, another backwards & slightly downwards; one forwards & downwards; & one inwards & a little forwards. The first of these is most frequent. In this dislocation the head of the bone leaves the acetabulum, & lodges against the dorsum of the ilium, & the symptoms are always characteristic. The lower extremity is shortened from 1½ to 2 inches, & the toes are inverted, the heel is raised from the surface, the knee is bent over the opposite limb; the limb is almost immovably fixed, & the great trochanter lies nearer the spine of the ilium than it does in the natural state. The upper portion of the capsular ligament is, of course, ruptured. This kind of dislocation may occur at all periods of life. It can occur only in consequence of extreme violence or severe injury. Reduction may usually be effected without the aid of the pulliys. The patient is placed upon his back on a low bed, & is placed under the influence of an anæsthetic. The surgeon placing himself by the side affected limb, grasps the leg with one hand just above the ankle, & with the other takes hold of the toes. Then he flexes the leg upon the thigh & the thigh upon the pelvis; then he places the knee over to the opposite side nearly as high as the chest of the patient, to

produce through relaxation of the adductor muscles & of the muscles connected with the articulations, then carry it out keeping the foot & the leg inclined over the opposite limb & proceed slowly & gradually, & presently the head of the bone will slip back into its natural position & it usually returns with a distinct snap.

LXIII. The head of the bone may be dislocated into the Sacro-sciatic notch. When an attempt is made to bring the leg in the straight position, the body will be rotated. If we attempt to raise up the limb the body will lie in contact with the surface of the bed or the floor. There is shortening of the limb but in a less degree than when the bone is dislocated on the dorsal surface of the ilium, there is also less ⁱⁿversion of the toes, less bending of the limb upon its fellow, less displacement of the great trochanter, & the symptoms are much like those in the other form of dislocation, & the accident is produced by the same causes.

The reduction can generally be accomplished by manipulation. Endeavor to draw the limb over to the acetabulum, & effect reduction as before. The head of the thigh bone may be displaced forward and downward into the oval foramen, resting upon the outer surface of the obturator muscle, the limb presenting

an appearance in a direction opposite to that assumed in the other two forms of dislocation. In this variety, the limb is elongated to the distance generally of about 1 1/2 in, & the limb presents almost directly forward, & is held in a state of painful abduction, & is kept in a painfully flexed condition. The great trochanter is separated at a greater distance from the anterior Superior Spinous process, than it is in the natural state. The accident is usually produced by a fall on the hip, at the moment the foot is everted.

Endeavour to effect reduction by manipulation in the same manner as in the other forms of the injury, gradually moving the limb upwards & outwards, having the limb in the flexed position & then rotating it on its axis, & as it approaches the acetabulum, lift it up as it were into the natural cavity. When employing the pulleys, make extension backwards & downwards in the first instance, by means of an extending band introduced high up into the groin & placed over the shoulders of the Surgeon the bone may be lifted into the acetabulum. In the 4th place, the bone may be dislocated against the body of the pubic bone, so that the head lies just beneath Ponsart's ligament, & on the outside of the femoral

vessels; when the limb is slightly everted, & it is also usually shortened about $\frac{1}{2}$ in or an inch. The head of the bone can usually be felt rotating under the hand, when the limb is rotated. This form is exceedingly rare, & the reduction is effected on the same principles as the reduction of the other varieties. In all these cases the Surgeon may be compelled to resort to the use of the pulleys. In doing this, apply the extending band just above the knee & the counterextending band in the groin of the affected side, the patient lying on his back or upon the sound side, attach the ends of the counterextending band to a hook or ring in the wall; or confide them to trust worthy assistants. Very rarely other dislocations are met with. There is occasionally one in which the neck of the thigh bone lies between the anterior superior, & anterior inferior spinous processes of the ilium, where it lies against the tuberosity, & in another form it lies against the spine of the ischium. In the first variety the limb hangs off prominently from the pelvis, & it is extremely everted, so that the foot presents itself almost in a transverse direction, the heel inclining inwards, towards the sound side, & being off from the ground, the

limb being considerably shortened. In the second variety, the limb
 is neither inverted or everted, & if there is any tendency it is to
 eversion & the limb is longer some $2\frac{1}{2}$ to 3 inches than in the natural
 state. In the third variety, the limb is greatly everted, & there is
 shortening to the extent of about $\frac{1}{2}$ inch. The head of the bone and the
 great trochanter may usually be felt in their unnatural position. The
 parts must always be carefully inspected, & reduction should be effected
 if possible, simply by manipulation. Dislocations at the
 knee joint are comparatively infrequent. Dislocation may
 occur in this situation in four different directions. The head of
 the tibia may be thrown backwards into the hollow of the knee. 2
 It may be drawn forwards & 3^d & 4th. It may be dislocated laterally
 on either side, which latter is usually the result of external violence.
 Seriously complicating the nature of the accident, & it is always
 incomplete. The reduction of the complete dislocations may be ef-
 fected by manipulation. The patella may be displaced
 inwards or outwards, the latter being more common. The accident
 may occur in consequence of external violence, or simply in
 consequence of muscular contraction & is most likely to take

place when there is undue laxity of the muscles. The symptoms are always characteristic, it being impossible for the patient to bend the leg upon the thigh, & the dislocated bone may be found readily in its unnatural position. It is generally readily reduced. The patient being recumbent, the Surgeon takes hold of the limb, places the leg upon his shoulder to bring it in a straight line with the thigh, which is flexed at the same time upon the pelvis; & the object may be accomplished by taking hold of the bone & pushing it in a direction opposite to that which it has followed in the displacement. There is another form of the occurrence in which the patella is thrown round upon itself or upon its axis, so that the inner margin rests against the outside trochlea of the outer Condyles, & the external margin presents directly upwards under the skin. When this is the case, the reduction is very difficult. In the reduction, the same principles are employed as in the former cases. Dislocations of the ankle joint seldom occur uncomplicated, generally occurring in consequence of fracture of the fibula, tibia, or astragalus. To effect reduction, place the patient recumbent on the opposite side, flexing the thigh. Extension & Counterextension are made,

& the Surgeon endeavors to push the bone back in its proper position.

After the reduction the limb is put up in Splints as in Cases of fracture of this articulation, the best apparatus being a tin Case.

If the injury is very great, amputation may become necessary, as soon as reaction has taken place. The Astragalus is usually

usually dislocated in different directions, & it can result only in

Consequence of external violence, & very often the bone is broken

at the same time. There will always be remarkable prominence

at the point of displacement. These accidents are usually Complicated,

& the rule is to cut down & remove the bone, to prevent

the horrible resulting Consequences. Then place the limb in

appropriate Splints & employ antiphlogistic remedies. In

other Cases reduction may be effected by manipulation.

LXIV.

Diseases of the Scrotum &c &c

The Scrotum is liable to epithelial Cancer, adoma, elephantiasis & many other diseases. The Chimney Sweep's Cancer


usually presents itself between the ages of 18 & 35 years, com-

mencing usually in the form of a florid wart or excrescence,

or in the form of a little tubercle upon some particular portion of the

Cutaneous coverings of the Scrotum. At first this is not attended with any pain or uneasiness. It gradually increases in size & becomes the seat of a sharp lancinating pain like that present in Cancer in other parts of the body. The parts around the diseased portion, become indurated & discolored & the discharge is of a sanguine unhealthy character. By degrees there is involvement of the surrounding lymphatic ganglia, & the constitution suffers more or less. The proper remedy is Excision which should always be performed as early as possible before there is any Constitutional disturbance or involvement of the lymphatic ganglia. The parts should be approximated in the usual way, & the patient's health be attended to afterwards, to prevent against recurrence of the disease.

The Scrotum is liable to Erysipelas or active & acute edema which occurs in the integuments, but gradually extends to the subjacent structures, as well as to the parts around, & is characterized by induration of the affected structures from interstitial deposit, discoloration, tumefaction & by severe pain. This generally depends upon a derangement of the digestive apparatus & demands the usual antiphlogistic remedies with occasional

punctures &c. If remedies are neglected sloughing will take place accompanied by  denuding of the parts & the testicles will become exposed. Elephantiasis is an enormous hypertrophy of the integuments of the Scrotum involving the testes & the penis & sometimes even the integuments of the adjacent parts. In this case there is great thickness of the integuments. The proper remedy for this disease is excision which should always be performed as soon as possible, the vessels being tied as fast as they are divided. Hydrocele is a disease of frequent occurrence. It is an affection of the vaginal tunics of the testicle, the tumor being of a watery character. There are several forms of hydrocele. 1st Hydrocele of the vaginal tunics properly so called, usually an unilocular cyst filled with the accumulated fluid. 2nd There may be an inguinal hydrocele, the cyst being formed usually at the junction of the epididymis with the testicle. 3rd There is hydrocele of the spermatic Cord, & 4th finally, Congenital hydrocele. Hydrocele of the vaginal tunics of the testicle is liable to occur at all periods of life, but is most common between the ages of

30 + 60 grains. The quantity of water varies in different Cases from a few drachms to several ounces. When the disease is allowed to continue without interruption, the amount will become enormous. The water may be perfectly limpid or of a pale yellowish complexion. Slightly Saline in taste, Somewhatropy in Consistence, & it is Coagulable by heat, alcohol, & acids. Sometimes this fluid is very turbid, or it may be mixed with Coagulating lymph or pus. Occasionally there are fibrous or fibro cartilaginous accumulations. Generally there is but one cavity, but Sometimes there are several Compartments, & the fluid may, though rarely, contain Hydatids. This is Caused by an abnormal Secretion. The immediate Cause is inflammation, generally of a chronic character. The testicle is usually in a healthy Condition; but in Cases of long standing, the testicle occasionally becomes atrophied; & occasionally becomes Enlarged, & Sometimes it is much

indurated. This affection is always slow in its development; there is no pain in the part, & the only inconvenience is its bulk & weight. The tumor is generally pyriform in shape, & fluctuates on pressure. There is no discoloration of integument; little or no enlargement of the subcutaneous vein; the testicle is usually situated at the posterior part & the tumor grows from below upwards. If the hydrocele is large; draw off the water & the patient will receive temporary relief; but in a short time the water will reaccumulate, & it must be tapped again, & so on. In the meantime support the parts with a suspensory bandage, & give the patient occasionally a dose of purgative medicine; & let him refrain from such exercise as is calculated to increase the tumor. If there is a small tumor, & the patient is comparatively

young; the proper treatment, especially in
 children, is always to put the patient on his
 back, not allowing any but the lowest pos-
 sible diet; elevate the parts; give a purgative
 pill or draught; & apply locally some astrin-
 gent fluid as a solution of acetate of lead;
 or Goulard's extract, or a strong solution of alum,
 keeping them constantly applied to the part
 for a week or two, when the fluid will have
 disappeared, & the patient will have been
 radically cured. In other cases, the appli-
 cation of equal parts of Iodine & alcohol may
 be resorted to once every day, & the mild
 ointment of iodine, iodide of potassium, or
 iodide of lead. If it resist these remedies,
 puncture it in different directions with a
 Cataract needle, when the fluid will grad-
 ually escape & the cavity will be emptied;
 & inflammation following, a cure will be

effected. Or, arm a needle with a single
 thread, & deposit it in the Cavity, taking
 it out in a day, & a Cure will follow in a
 few days. In Cases of Congenital hydrocele
 in a very young infant, reduce the tumor &
 Employ the mildest treatment. In hydrocele
 in the adult; the general mode with a view
 to the radical Cure is to draw off the fluid,
 & inject some slightly stimulating fluid.
 A good operation Consists in the introduction
 of a Seton. Draw off the fluid by means of a
 trochar, making the incision at the anterior
 portion of the tumor, Carrying the instrument
 obliquely upwards & backwards. After having
 drawn off the fluid in the usual manner,
 then retain the Cannula, push it up some
 distance from the opening, & reintroducing
 the trochar, make a Counteropening through
 the anterior & upper portion of the tumor,

& through this push both the trochar & Can-
 nula, withdraw the trochar, & insert through
 the Cannula a probe armed with a ligature
 of linen or muslin; remove the probe & the
 Cannula & tie the ends of the ligature together
 over the anterior surface of the tumor. The
 patient is put in bed & kept recumbent. The
 Scrotum is Suspended by means of a bandage
 or by means of a Soft bandanna handkerchief, & the
 patient is treated antiphlogistically, & the Symp-
 toms are Carefully watched. When undue inflam-
 mation Supervenes, remove the foreign Substance
 when enough inflammation has taken place to
 produce an effusion of lymph, take away the
 Support & treat the patient antiphlogistically,
 until the inflammation has Subsided, when
 he may go about; but not before. After the
 acute stage of inflammation has passed off,
 make use of Sarcifacient remedies, to get rid

of the plastic matter effused in consequence of the operation. The popular method is to inject iodine, or iodine + alcohol into the opening, treating the case afterwards on the same principles as when the Seton is introduced. The most common Encysted Hydrocele is in Connection with the Spermatic Cord. The tumor is generally very small. This is supposed to be formed in consequence of the closure of some of the cells in the cellular tissue in this situation. The tumor may be situated at various portions of the Cord. When it lies within the inguinal Canal, it may Simulate a hernia. The tumor is slow in its development & is seldom productive of much inconvenience, & it can generally be pressed along the Cord. The operation consists in passing a little thread by means of a needle through the tumor, & removing

this in 24 or 48 hours & a Cure will follow,
Or make an incision into the tumor, & dis-
sect up a little portion of the Cyst.

Hæmatocele is a Collection of blood
in the vaginal tunica of the testicle, & some-
times in the Cellular Substance immediately
beneath the skin. It is generally produced by
a blow or some external violence, or by the inju-
dicious use of some instrument used in puni-
ting the Scrotum. It is a very rare occurrence.
It is a heavy doughy tumor, & there is always
more or less discoloration of the Scrotum.

In a Case must be relieved. When the ac-
cumulation is small & the patient is in good
health, Employ Sordifacient remedies. In
other Cases make an opening, & allow the ac-
cumulation to escape Especially when the
accumulation is large.

Varicocele Consists in enlargement

of the veins of the spermatic Cord. In this affection, these veins undergo a degeneration of their Coats, which become dilated at certain points, or the dilatation is greater at some points than at others. This affection is more Common on the left Side than on the right, owing to the presence of a valve at the mouth of the right vein, & the absence of any such valve on the left Side. This affection is most Common within the first 10 years after the age of puberty. The immediate Cause seems to be produced by masturbation, when the parts are kept in a state of excitement which is frequently reproduced, followed by relaxation & by the occurrence under Consideration; & it occurs often before the age of puberty. The symptoms are the presence of a tumor larger at the bottom; & feeling it, it presents the feel of pressing together the intestines of a

Small animal. It is composed of Cords which can be moved about each other, & if the Scrotum is relaxed, the bluish Color of these large veins may be distinguished. Flaring the patient recumbent, these veins will be emptied. Place your finger on the External abdominal ring & request the patient to rise, when the veins will become refilled, & the nature of the disease be at once determined. There is usually very little pain except when the patient is subject to neuralgia. Generally, there is a sense of weight. Most persons have a considerable amount of perspiration in the Corresponding Side of the Scrotum; & very often the perspiration is particularly offensive. Wasting of the testicle gradually occurs from the presence of Varicocele, caused by the weight of the vessels; & it is frequently on account of this wasting, that the physician

is Consulted by the patient for relief.

The treatment is palliative & radical. The palliative treatment is an avoidance of the exciting Causes whatever they be; Suspension of the tumor by a proper bandage; Cold bathing twice or thrice in the 24 hours; Cold water, or water containing Acetate of lead or Goulard's extract, to Constrict the vessels of the part & afford relief. The patient's bowels should be properly attended to & the alimentary Canal must not be allowed to be too much filled with fecal matter. Another means is that of including the elongated Scrotum in a ring so as to press the affected veins against the External abdominal ring. Another operation consists in retrenching the elongated Scrotum cutting it off in the greater portion of its extent, for the purpose of placing the affected veins high up against the External abdominal ring. The radical Cure should only be

undertaken when the tumor is of large size &
 threatens to impair the functions of the testicle;
 when it is productive of pain, or productive of
 mental emasculation. A good operation
 is Cutting through the Scrotum upon the
 enlarged veins, isolating them, passing a
 needle underneath them, placing the Extremities
 of the instruments across the incision, lapping
 a thread around the needle, so as to construct
 the veins; Similar to the employment of the
 hair lip Suture; & allowing this instrument
 to remain for 24 or 36 hours, passing an instru-
 ment upon the Surface of the needle, Cut these
 veins off & remove the needle & the thread,
 & approximate the Edges over the point where the
 needle was previously, in the best possible man-
 ner. Another operation, & the best one is
 Prof. Hancock's operation. Separating the
 veins from the Testes by the thumb, &

finger, then pass an instrument consisting of a flat needle armed with a stout ligature between the vas deferens & the enlarged veins from before backwards, & then enter the point of the needle at the opening through which it has just passed; then pass it around the circumference or the external portion of these enlarged veins & then the point out in front at the opening of Entrance so as to make but two openings, the needle passing through each, twice; having included the enlarged veins in this way, tie them finally over a button, or without a button. In case of operating for Varicoele, it is proper to institute a system of preparation by diet, rest & purgation, or there may be dangerous disease of the veins leading to the destruction of the patient's life. When there is great elongation of the Spermatic, it may be necessary in addition to retract the Spermatic, cutting

off the redundant portion, & bringing the edges together by means of several points of the interrupted suture.

The testicle is liable to various affections as inflammation & its consequences; abscess, & even gangrene, & the various heterologous & cystic formations, neuralgia, atrophy, hypertrophy &c.

Inflammation of the testicle may be acute or Chronic, mild or severe. It is called into existence by many causes. Generally, it is the result of the Gonorrhoeal disease, sometimes of an extension of the morbid action along the urethra & the course of the ejaculatory duct, Seminal Vesicles & the deferential tube. It may be produced by external violence, suppressed cutaneous perspiration, by gout & rheumatism; by diseases of the urethra & bladder. Occasionally, it is the result of metastasis in cases of inflammation of the parotid gland.

It is characterized by the ordinary Symptoms of inflammation; pain, heat, swelling, discoloration of the integument + tenderness on pressure, a sense of weight. The pain is severe, Sinking in its effects, radiating about in different directions. One testicle is usually affected, but Sometimes both are involved. The swelling may be so great that the organ may be 3 or 6 times its natural bulk. Generally the Epididymis is more involved than the testicle. It extends along the Spermatic Cord in many cases. The tumefaction is commonly produced by an effusion of plastic lymph. The treatment must be strictly antiphlogistic. A good Emetic at the outset of the disease will be found very advantageous. If the patient is plethoric & the symptoms are urgent, take blood freely; & afterwards make use of the Saline & antimonial mixture to keep up a constant action on the bowels, & excite the secretions, &

likewise to keep up a certain amount of nausea. The parts must be suspended, & use made of medicated lotions, the best of which is the hydrochlorate of Ammonia & Opium or Laudanum, applied by means of a flannel cloth covered with oil cloth. If the symptoms run high, apply leeches to the inner & upper surface of the thighs, groin & perineum, but not to the scrotum unless it is much swollen & in a state of induration. Afterwards, mercury may be given even to the excitation of slight ptyalism, properly guarded with Opium; purging the patient & properly regulating the diet, to get rid of the Congulating lymph upon which the induration & Swelling of the parts depends.

The immediate object may be accomplished by means of Compression with adhesive strips systematically applied.

Chronic inflammation of the testicle.

This constitutes testitis, when the disease continues for months & even years especially when produced by Syphilitic action. The deposits are of a faint yellowish complexion, & occupy the place of the Seminiferous tubes, & the Constitution & function of the organ are materially impaired. The disease is non-malignant. It is attended with great induration, a little enlargement of the inferior extremity of the Spermatic Cord, & with a sense of weight in the affected part. The Constitution is usually in an impaired Condition. When the disease is caused by Syphilis, use the preparations of iodine & mercury, & the iodide of potassium, keeping the patient under slight ptysalism for several months. 5 to 15 grs Potass. Iodid: may be given 3 or 4 times each day. Pay attention to the diet & use tonics when indicated. In the ordinary form, place the patient in the recumbent

position; purge him every second or third day with a black draught; restrict the diet, avoiding animal food; keep the parts elevated, & employ some antiseptic lotion, embrocation, liniment orunction; & a few leeches occasionally in the neighborhood of the affected organ; or, if the induration be very considerable, directly to the affected organ.

Abscess is an occasional termination of inflammation of the Epididymis, or of the body of the testicle, or both, but it is infrequent. The matter may form in the vaginal tunic; or within the fibrous coat of the testicle, when the patient suffers immensely. The rule is to let out the matter as early as possible; even when there is not distinct fluctuation.

Should a fungous protuberance take place of the seminal tubes through the puncture made, be careful not to remove it with the knife. I order

to reduce the inflammation of the part as rapidly as possible; dissect up the integuments immediately around the protrusion, make the edges raw, & bring them together over the fungous mass by Sutures or adhesive strips. Sometimes mere pressure with the adhesive strips will answer the purpose.

The heterologous formations are very infrequent the most common being the encephaloid & the tubercular.

Encephaloid disease of the testicle is most common in young subjects before the age of 20 & takes place frequently in very young children; Sometimes in middle life, & seldom in old life.

It commences in the body of the testicle, extending to the Epididymis, but not the Spermatic Cord & the Lymphatic ganglia of the scrotum & internal part of the abdomen. It is rapid in its progress, the testicle soon acquiring a large bulk.

This disease is always fatal in its consequences. The tumor is always solid; the testicle is frequently indurated. The tumor grows from below upwards. Usually one organ alone is affected. The patient becomes emaciated. Finally ulceration takes place, a fungus spreads out & hemorrhages hasten the fatal conclusion. The proper remedy is Excision performed as soon as the diagnosis is established, before there is any susceptible involvement of the surrounding ganglia; but very often there will be a speedy return of the disease.

There is a disease called Encysted testicle; when the testicle is enlarged, affecting a number of cells filled with a watery fluid or gelatinous substance, or blood & water, or a sort of bloody jelly. The disease is most common between the ages of 18 & 35. It is a rare disease in this country; always commencing in the body of the testicle, extending to the Epididymis

but never to the Spermatie Cord. The testicle is ovoid & acquires great volume. The disease is slow in its progress & there is no malignancy nor involvement of the Constitution. Excision should be performed as soon as possible.

Neuralgia of the testicle is usually associated with neuralgia of other parts of the body. The organ becomes exceedingly sensitive & is subject to severe paroxysms of pain coming on regularly or irregularly. The pain is of a sharp darting character, passing about in different directions, passing generally up the Spermatie Cord, & in other directions. The organ retains its natural structure & natural bulk. In most cases there is either some disease in the course of the urethra, or at the neck of the urinary bladder, & it is always connected with derangement of the digestive organs; but slight derangement of the general health. Sometimes it is

produced by tumouroidal tumors which radiate their influence upon the testes. The organ must be examined to determine the nature of the exciting Cause. Regulate the diet & bowels. Suspend the testicle by a bandage & make use of anti-neuralgic remedies as ^{quinine} in Combination with Aconite; Strychnia, belladonna, & the Extract of Aconite.

In the chronic form, smaller doses of quinine may be given in Cases dependant upon miasmatic influence, with some belladonna. Medicated lotions may be applied to the Scrotum; & the parts be frequently washed with warm water.

Tuberculous deposits of the testicle occur generally at an early age, & must be met by antistimulous remedies, & where there is an accumulation of fluid, it should be drawn.

Phymosis may be Congenital or acquired by Gonorrhoea, or Chance, or

ordinary inflammation, producing induration of the part with more or less contraction.

When there is elongation, the operation of Circumcision must be performed; & then to relieve the orifice, if that is not done by removing the redundant portion of the prepuce, introduce a grooved director along the dorsal surface of the head of the penis, corresponding to the median line & slit up the parts by means of the knife. Then tack the edges of the wound together by means of several points of the interrupted Suture & the patient is relieved. When dealing with a chancre, never perform the operation for phymosis.

In performing the operation for phymosis, fatal hemorrhage has been the result, which should not have been, as the arteries may be secured readily by means of the ligature.

The hemorrhage will usually yield to the Suture
Paraphimosis is usually produced

by the little boy playing with his penis, & it is the reverse of phymosis, & the head of the penis becomes swollen on account of the Constriction. The operation is simple when it is performed sufficiently early. Make systematic Compression with the thumb & fingers upon the head of the penis to press out the blood, ~~in order that~~ when the volume has been considerably diminished, push the prepuce in the opposite direction from behind forwards & accomplish the object. When this does not answer, pour cold water upon the head of the penis from a considerable height, & then make systematic Compression. If this fail, take the bistoury & cut the part at the side of the penis about a line or a line & a half & then the object will be effected by the manipulations.

Stricture of the Urethra may be Spasmodic or organic. Organic Stricture of

the Urethra is of frequent occurrence, especially after a certain period of life. It takes place in both sexes, but comparatively seldom in the female. The most frequent Cause is Gonorrhoea. Sometimes it is produced by external violence, attended with an effusion of plastic matter into the substance of the mucous membrane & the submucous cellular tissue.

It presents itself in various situations & in various degrees & forms; most commonly it occurs at the narrowest portion of the Canal which is the membranous portion which is suspended in the triangular ligament of the urethra, or the perineal fascia of the pelvis. It is liable to occur in the spongy portion of the Canal. Sometimes it takes place just behind the external orifice. Another seat is the bulbous portion. The prostatic portion of the urethra is exempt from this occurrence. There may be but one

Stricture or there may be a number of them, generally there is but one. In the most simple form the Contraction resembles that produced by throwing a thread around the tube, being very narrow in its Extent; but it varies Exceedingly; even in Some Cases, occupying the Space of Several inches. Its extent may also vary as it affects the Calibre of the tube. The Consistence of the stricture may vary from that of recently organized Coagulating Lymph, to that even of Cartilagenous Character, according to the age of the stricture & other circumstances. In Cases of recent standing it will be Soft. The Symptoms are generally Slow in their appearance. It is a long time forming; & by & by, the Stream of urine is found gradually diminishing, & it becomes Spiral in its appearance; & more effort is required to expel the urine than in a natural state, & there is a Sensation of burning or uneasiness

around the pubis, & there is generally a sort of gleet discharge, being more or less ropy.

The sufferings of the patient are terrible especially at night when there is Chorda & not infrequently involuntary Emission of Semen; & they suffer exceedingly after Copulation; & they are rendered worse by Cold & general Exertion. When the disease is formed there may be derangement of the general health. Examining the patient by the finger, pass along the inferior portion of the organ, & the structure may be determined by the resistance offered to the finger, when it occupies the Spongy portion. The diagnosis is to be determined by an exploration of the Canal itself, introducing a bougie or a catheter which should always be well oiled, first to promote its introduction & to prevent the development of Stricture. When the stricture exists in a mild or very simple form

it should be overcome as speedily as possible in order to prevent its being followed by the worst consequences, owing to the expansion of that portion of the tube behind the stricture.

The stricture is generally overcome by dilatation & Cauterization, & a division, or incision.

Before attempting either of these operations the system of the patient should be properly prepared, especially if the stricture is of long standing, very tight, or attended with great suffering of the genito-urinary apparatus & of the system at large: Employ a proper course of diet; pay attention to the bowels; & use demulcents & anodynes, getting rid of as much Constitutional & local irritation as possible.

After purging, if there is difficulty in urinating, give Soda Bicarbonas; an anodyne injection & anodynes by the mouth; & after proper preparation commence the treatment

according to circumstances. When the stricture is recent, & comparatively soft; the treatment by dilatation is the proper one. If it is of long standing & hard, the treatment by incision should be employed. The dilatation may be gradual; or the stricture may be freed in some cases, the instrument being passed at one operation into the bladder; & it should be performed with a great deal of care. After the cure constant attention must be paid to it, lest the stricture relapse. If there is a stricture attended with a great degree of scalding the proper method is to cauterize the parts, at least in front of the stricture, by means of the nitrate of Silver; the object being thus to remove the morbid sensibility.

Cauterization is applicable to the stricture where there is irritability of the urethra, Nitrate of Silver, Caustic potash, or the

Vesicae paste may be employed; but the Nitrate
 of Silver will generally be found to be sufficient
 Employing it until the morbid Sensibility of the
 urethra is overcome, & then employ dilatation
 or incision according to the Circumstances of
 the Case. When a stricture is very firm, of
 long standing, or of great extent, the best
 method of treatment is by incision from
 within outwards. For this purpose, introduce
 an instrument within the stricture, & then
 insinuating it as far back as possible, introduce
 a lancet shaped Contrivance with which the
 division of the obstacle is to be affected.
 The instrument usually employed is a
 sort of Catheter invented by a Mr Stuart an
 English Surgeon. Make 3 or 4 distinct
 incisions & immediately after the division,
 Carry an instrument down into the bladder
 & retain it there for several days; & then

remove it to clean it, & then reinsert it.

The operation is attended with very little hemorrhage & with very little pain.

There is a class of stricture impermeable by any instrument; but such strictures are not necessarily impermeable to urine, which is passed with great difficulty & in a small stream.

The operation for the cure in this case, is the perineal external section. Pass an instrument down to the seat of the obstruction; & then passing the index finger of the left hand into the rectum, use that as the guide to the knife; & with a straight bistoury make an incision along the middle line of the perineum just above the verge of the anus & make it small, pass on the point of the instrument gradually until it gets into the obstructed portion of the urethra; then turn the edge upwards & divide the

Structure in the membranous portion of the urethra as far forward as the instrument lies in the part. Then pass a full size Catheter into the bladder & retain it there until the wound in the perineum has healed over the instrument, & thus effect a Cure.

Urinary abscess may occur from various Causes. In Consequence of changes produced in the mucous membrane of the urethra, ulceration & rupture may take place, & a little portion of mucus going way, a drop of urine gets into the Connecting Cellular Substance, soon giving rise to a urinary abscess. However caused, the Symptoms are, pain, heat, Swelling discoloration redness of the parts, & disorder of the Constitution Even when the Effusion has been Comparatively Slight; & there will be

difficulty in passing the urine.

The treatment is here an early incision, not waiting for distinct fluctuation, down into the urethra at the seat of the swelling followed in all cases by the introduction of the Catheter if it be possible; & then employ the ordinary antiphlogistic remedies locally & Constitutionally.

There may be a more serious extravasation of urine producing a typhoid state of the System. The treatment consists in making extensive incisions, along upon the scrotum; from one extremity to the other, & from one side to the other. Divide the parts, give vent to the urine & pent up fluids; cut into the urethra if it is possible, & if impracticable pass a Catheter & draw off the urine from the bladder as fast as it is secreted. Then foment the parts with Opium & Sugar

of lead, with warm lotions which should be diligently applied. Stimulants must be given in the same manner; quinia or some other tonic medicine to sustain life.

Urinary fistula. This consists of a passage communicating with the skin & the mucous membrane of the urethra, which is usually the result of an abscess; or a rupture of the mucous membrane of the urethra usually produced by a tight stricture. However induced, there will be discharged through this opening, more or less unhealthy & fetid pus mixed with water or urine, which may be small or large in quantity. There may be one or a number of openings, but there is generally but one internal opening. The parts around the external orifice are usually indurated from interstitial deposits & the parts are tender & painful, & more or

less discolored. A fistula of itself may be treated according to its Causes, with the prospect usually of Speedy Success, provided the parts have not been too much diseased in consequence of the long Continuance of this morbid action.

The rule is to remove the Stricture first.

The stricture will generally be found just in front of the fistulous opening, & it may be gotten rid of by dilatation, Cauterization, or division according to Circumstances; & when it has been disposed of; ~~the~~ the fistula if it is of recent occurrence will generally be gotten rid of by itself; Should it remain, then endeavor to effect a Cure by addressing remedies to it; & this may be done by attention to cleanliness, rest to the parts & the System at large, using the mildly antiphlogistic remedies; applying a little Argenti Nitras either in Substance, or by injection; or the

tincture of iodine, or a strong solution of
Plumbi Aetas, or Goulard's Extract. If
 this do not answer, a red hot Cautey may
 be inserted into the tract, & if this do not answer,
 apply a blister to the part, making use, at
 the same time, of the *L. Iodurum*. If all
 these fail, the only remedy is division of the
 fistula which can be easily accomplished, by
 passing an instrument down as far as the
 seat of the external orifice & a little beyond
 it, & cut down through the fistulous opening
 & maintain an instrument in the bladder
 until the cicatrization of the wound over
 it.

The urinary bladder is liable to in-
 flammation & its consequences, as well as
 various heterologous formations.

Cystitis may be produced by external
 injury, suppression of the cutaneous

perspiration; by a gouty or rheumatic state of the system; by gonorrhoea, & various other Causes. The disease may be acute or chronic, mild or severe. It occurs at all periods of life & in both sexes, but more frequently in the male. It is characterized by a Sense of weight & oppression deep in the region of the pelvis, & there will be tenderness on pressure of the epigastric region & the perineum; & the pain will radiate about in different directions. There is a frequent desire to pass water, & there will be a scalding sensation in doing so. The patient will usually pass more urine than in the natural state, & the urine will be more highly colored.

The treatment must be strictly antiphlogistic. In mild cases, Calomel may be given alone or combined with Jalap &c. followed by Magues's Carb: or some similar

could Cathartic; but the patient should always be purged, Especially if the bowels be overloaded. If the symptoms are urgent, the patient may be bled first. Then give anodynes liberally in full doses, to control the muscular contractions; & if advisable, a diaphoretic may be combined with the anodyne. An infusion of Opium may be applied by a flannel cloth, to the surrounding parts; the strength of $\mathfrak{z}\text{ij}$ or $\mathfrak{z}\text{ijj}$ in a Gallon of warm water.

Chronic Cystitis is of frequent occurrence, & is met with under a great variety of circumstances. It may be produced by structure of the urethra; by enlargement of the prostate gland; by the presence of a foreign body in the bladder; & other circumstances. It may be a Sequel of the acute form of the affection. It may

Continue for months & years.

The affection is characterized by a frequent desire to pass urine, attended by more or less difficulty & straining; the pain radiating in all directions. The quantity of urine may be increased, diminished, or natural, depending upon Circumstances. The quality varies; it is usually lighter; generally the fluid is unnaturally thick, owing to the presence of an unusual quantity of mucus. It is frequently alkaline in its properties, & in many instances it is apt to become fetid; Sometimes before it is voided, & always after it has been retained for even a short time in the vessel.

There is always a large amount of mucus, which is always remarkablyropy, inspissated. Sometimes it is perceptible as the urine flows from the urethra, & in all Cases it soon subsides to the bottom of the vessel, to which

it firmly attaches itself. There is also, often,
 especially when there is stricture, or enlargement
 of the prostate, more or less phosphate of lime
 presenting itself in the form of streaks spread
 over the mucus which is furnished by the
 mucous membrane in a state of inflammation.
 It is sometimes furnished in considerable quantity.
 In the more obstinate cases, there is also more
 or less pus, which is sometimes considerable
 in quantity; from several drachms to several
 ounces in the 24 hours. In other cases,
 there is sometimes a discharge of pure blood.
 There will be scalding in passing water, &
 frequent pain in the head of the penis; &
 the patient may become affected with hemorrhoids,
 & perhaps prolapse of the bowel; &
 sometimes hydrocele, & occasionally serious
 disease of the seminal vesicles. The general
 health soon becomes deranged; the digestive

organs suffer; & the disease goes on, becoming worse & worse, until the patient is at last destroyed by hectic. If there is a stricture, this must be removed. If there is enlargement of the prostate gland, this difficulty must be removed. If the patient is laboring under stone in the bladder, it must be removed by an operation. The patient will generally be greatly benefitted by repose in the recumbent position; & when walking about, he should not expose himself to fatigue, & should take no exercise on horseback, or in a carriage over a rough road. He should have no sexual intercourse. The diet should be unctuous but non-stimulant, & ale or porter will generally be of advantage. The use of purgatives will be found beneficial, especially if he is dyspeptic. Give Every 4 or 5 nights $\frac{1}{2}$ gr Blue mass

with jalap or rhubarb & a little white Soap,
 to act gently on the bowels & upon the Secretions.
 Purgent drinks should not be Carried
 too far. If there is acidity of the Stomach,
 the Soda Bicarb. & other alkalies may
 be used with advantage. Anodynes are
 indispensable & they may be given by the
 mouth or by the rectum; using a Suppository
 of 2 or 4 grs of Solid Opium or 8 or 10 grs of
 Naphia, or an Enema of Laudanum &
 water. The Balsam of Copaiba should
 be used in the same form as given in
 Gonorrhoea, only in smaller quantity, in emul-
 sion with gum arabic & loaf Sugar, with
 some Camphur water, & add to it a little
 Laudanum, or Colubinum & administer it
 3 or 4 times a day. About 15 or 20 drops of
 Balsam of copaiba with Aqua camphura $\frac{3}{4}$
 4 times a day. It should, occasionally,

be omitted for several days, & then be resumed;
 & in the interval, something else may be substituted. Puerus may be given in combination
 with Symplicium or hops; or uva ursi may
 be used, giving $\frac{1}{3}$ tumbler full of infusion with
 20 or 30 grs Sida Limbonia, several times in
 the 24 hours. Puerus Prava does not seem
 to be as advantageous as other remedies. It
 is used \mathfrak{zj} to Aqua Orij boiled to \mathfrak{oj} using
 \mathfrak{zij} to \mathfrak{zj} , 4 times in the 24 hours.

It seems to be productive of nausea & even
 vomiting. The preparations of turpentine,
 as the Oil, in doses from $\mathfrak{st}\ \mathfrak{x}$ to \mathfrak{xxij}
 several times a day or from \mathfrak{ss} to \mathfrak{ss} of
 turpentine in substance, may be used, &
 occasionally with advantage. The articles
 should be varied from time to time.

Occasionally, especially when a tonic is
 required; benefit will be derived from

the muriated tincture of iron, either alone, or in combination with some other antiseptics.

If the symptoms are severe, use leeches to the perineum 3 to 6 (every 4 or 5 days until the symptoms are relieved); or they may be put around the verge of the anus; or to the inner + upper surface, or to the epigastric region. Issues & Setons may be employed down the perineum, or lower part of the Epigastrium. Sometimes the bladder is irrigated, which is proper when there is enlargement of the prostate gland leading to long retention of a portion of the urine & of large quantities of mucus. It may be irrigated with tepid water, or water medicated with citric or other acid, or some mild astringent fluid. Afterwards inject into it some medicated lotion, as the nitrate of silver, or a weak solution of the tincture of iodine.

or acetate of lead, or Sulphate of Zinc &c;
 but they should be used with great Caution.
 allow these lotions to remain in contact
 with the mucous membrane, as long as the
 organ will tolerate the presence of the fluid.
 In many cases the patient is benefitted by
 anodyne injections, particularly applicable
 when there is great morbid sensibility in the
 bladder, & in the course of the urethra. For
 the purpose of injection the double Catheter
 is used.

There may be an irritable bladder,
 depending upon many causes, which is
 indicated by a frequent desire to pass
 water, attended with more or less Spasm
 & burning as the fluid passes along.
 It may exist by itself, but generally is
 in Combination with disease of the
 mucous membrane of the bladder;

disease of the prostate gland; or disease of the urethra of an organic character.

Cure the Cause, whatever it may be, & treat the Case upon general principles, giving antispasmodic remedies; & in all Cases, diaphoretics in the form of Dover's powder, & anodynes will be of great Service; & Sometimes the passage of a bougie, or Catheter &c.

Malignant diseases are of frequent occurrence, & are always difficult of diagnosis, & sure to terminate fatally sooner or later.

The prostate gland is liable to disease; to inflammation & its various consequences, as well as the various heterologous formations. It is seldom diseased before middle age, except when there is stricture of the urethra, or disease of the bladder.

Acute inflammation of the prostate is characterized by the symptoms denotive of inflammation of the bladder. There is a sense of weight & fulness deep down in the region of the bladder pelvis, & a frequent desire to micturate; scalding as the fluid flows along; discharge of mucus; & pain in the perineum & around the verge of the anus; with more or less Constitutional disturbance. The treatment is the same as for Acute Cystitis.

Occasionally this disease terminates in abscess, when the rule is to evacuate the matter as soon as possible, lest it break into the urethra or into the rectum; or the matter may find its way into the perineum when the perineum should be punctured.

Enlargement of the prostate may be confined to one lobe, or may exist in two lobes, or in all three.

This is one of the effects of old age; but in many cases, it takes place in consequence of long continued horseback exercise; excessive venereal indulgence; affections of the anus & rectum; long continued disease of the urethra; & Sometimes without any cause. It gives rise to serious disease of the urinary bladder.

Very little can be done for the relief of a patient thus circumstanced. In the early stage, an attempt may be made to prevent the extension of the morbid action, by placing the patient in a state of repose, making him live abstemiously; using antimonials & purgatives, with cooling injections into the rectum, &c. One great difficulty it gives rise to, is difficulty in discharging the urine; which must be met by the introduction of the

Catheter; & the patient should introduce it twice or three times in the 24 hours, to evacuate the urine, drawing off the whole of it, if it be possible.

Retention of the Urine

may be caused 1st by Stricture; 2nd by paralysis of the bladder; 3rd by enlargement of the prostate gland; 4th by injury of the perineum; 5th by Calculus; 6th by an imperforate Condition of the urethra; 7th by priapism; 8th by Cancer of the penis; 9th by obstruction from blood, mucus, or lymph, & 10th in consequence of an hysterical Condition of the System.

In a Case of Retention of urine, placing the hand on the hypogastrium, a tumor will be perceived running nearly to the umbilicus. It is usually larger above than it is below; & afterwards it will

mount up above the umbilicus, to nearly as
 high as the epigastrium. Introducing a
 finger into the rectum, a tumor will be per-
 ceived in that direction; pressing the infer-
 ior wall from below backwards, the tumor
 in both situations will be found to fluctuate
 especially that in the rectum. The symp-
 toms gradually increase, & gradually Con-
 stitutional Symptoms are developed; Symp-
 tomatic fever arises by & by. As the ac-
 cumulation progresses, the breath & the
 perspiration become urinous; the pulse
 becomes feeble & fluttering; the extremities
 become Cold; delirium exists to a greater
 or less extent, & the patient gradually
 perishes. After the retention has continued
 for a certain length of time; there Super-
 venues incontinence of urine manifested
 by the dribbling of water from the urethra,

which takes place, usually, at the end of the 2nd or 3rd day. It may come off in a little stream, but the bladder is never entirely evacuated. When the disease arises from ^{organic} structure, relief cannot be obtained until the structure has been overcome.

The Spasmodic structure consists in an inordinate muscular contraction on the part of the fibres found in the urethra, & in the parts immediately around. It may arise from exposure to cold; irregularity in diet & drink; riding on horseback; inordinate sexual indulgence; masturbation. Sometimes it is dependant upon an acid condition of the urine, or upon the presence of a hemorrhoidal tumor, or some other disease at the verge of the anus, or in the rectum; or irritation in the vagina, or uterus, or other portions of the genital apparatus.

It is manifested by a frequent desire to pass water, with an inability to do so; an overflow when it does run, to a little extent, with pain & scalding; & the patient is in constant & great agony.

The remedy consists, in first introducing the Catheter to evacuate the urine, taking a large sized instrument which should be passed down carefully. It is not necessary always to introduce it into the bladder, for the Spasm may be overcome when at the orifice, at the bulbous portion, & at the membranous portion of the urethra; & then, guard against the recurrence of the affection.

If it depend on disorder of the digestive System, give a purge, & then an antispasmodic & anodyne, as ipecacuanha combined with ipecacuanha or tartar emetic; & apply fomentations to the abdomen, to the perineum,

(33) 4

to the genitals. The fluid maybe Simple or medicated. If this dont answer, administer an anodyne injection; or the warm bath may be used. If the patient is plethoric, & the spasm great; blood may be taken from the arm, or by leeches from the hypogastrium & perineum.

Retention of Urine maybe produced by paralysis of the bladder. This may be induced by a great variety of Circumstances as external violence; a blow upon the spine or the lower extremities; or injury of the Skull acting upon the brain; or by an effusion of blood, as in apoplexy; by injury applied directly to the hypogastric region, or to the perineum; by the passage of a child's head in parturition. The remedy is the Catheter, but this does not afford permanent relief. If possible remove the Cause.

In these Cases, use the instrument from time to time, every few hours, reinserting it each time & not allowing it to remain constantly.

Retention of Urine may be Caused by Enlargement of the prostate gland.

In this Case, pass a Catheter until it Comes in Contact with the Seat of the obstruction. The urethra frequently becomes elongated.

Oil the index finger of the left hand, & insert it into the rectum, & thus Conduct the Catheter over the Seat of the obstruction. Use an instrument which shall not have too abrupt a Curve.

The retention may arise from injury of the perineum. In such Case, Employ the Catheter, & if necessary retain it for a day or two in the urethra.

If the difficulty depends on the presence of pus, the operation Consists in making

a free & early incision; & in the introduction of the Catheter; leaving the instrument in the bladder after the incision has been made.

Retention may occur from the presence of a Calculus in the urethra or in the urinary bladder, or a stone may be impacted in any part, presenting a mechanical obstruction in the evacuation of the bladder or urine. The object then, is to get rid of the substance. If it is at the mouth of the tube, introduce a Sound, & push it up into the bladder; if it has become impacted, try to remove it by a pair of forceps; & if this will not do, the operation for lithotomy must be performed.

There may be an imperforate Condition of the urethra which is usually Congenital; but sometimes it results from inflammation or stricture, & an incision will afford relief.

Priapism may give rise to retention of urine; inordinate & violent erections which

may be the sequene of venereal Excess; or external injury; or of frost; or inconsequence of disease of the Cerebellum, wounds or injuries of the Cerebellum. The patient must be treated antiphlogistically, by bleeding, purging, antimonials, anodynes, & antispasmodics of various kinds.

Give tartar emetic in Combination with Ilophia, or Opium, & Camphor, making use locally, at the same time, of various antiphlogistic remedies.

Use the Catheter twice or three times a day.

Retention may occur from stricture of the Penis, during the progress of which, Sometimes the whole urethra becomes involved; & the urethra may become not only diminished in length, but greatly in diameter. In such cases, proper incisions must be made, so as to render it able to pass an instrument into the bladder, maintaining the hold, by the use of a slippery oleo bougie, or a gum elastic instrument.

Retention of Urine may be the result of obstruction of the urethra from blood, mucus, or lymph; but these Cases are Comparatively rare. In introducing the Catheter Force of the vessels of the mucous membrane may be lacerated, followed by a Considerable effusion of blood which may pass into the bladder so as to Cause a serious impediment to the Evacuation of the Contents; or hemorrhage may take place in the kidneys, ureters, or bladder itself, & in this manner produce the obstruction. When in introducing the instrument, the eyelets become obstructed & the urine refuses to flow out, for a period of 6, 8, 10 or 12 hours; give in the mean time a large anodyne, & apply fomentations to make the patient as Comfortable as possible. Then introduce the instrument again more gently, & the probable result will be that the urine will flow without any difficulty.

A Case may arise where the bladder is

distended with blood, & then the treatment consists in making use of injections of water, or water & vinegar, or some decomposing fluid, to dissolve the Coagulum, drawing off the blood little by little. It is only when the quantity of blood is inordinate, & the symptoms are urgent, & the other treatments have been ineffectual, that a surgeon is justified in puncturing the bladder to scoop out the blood. There may be hysterical retention of urine, occurring most commonly in young girls soon after the age of puberty, caused by derangement of the menstrual functions, or derangement of the digestive organs; or organic disease of the vagina, uterus, or rectum. The remedy is in the first instance, the Catheter; & afterwards the use of antispasmodics; removing if possible the exciting Cause. The instrument should not be used too frequently. Draw off the urine at intervals of 12 hours or so.

When there is no obstacle, take a large sized instrument, one which shall distend the walls of the urethra. Oil it Carefully & warm it properly; then holding the instrument lightly between the thumb & fingers; place the little & ring finger about the umbilicus, & then holding the penis up with the thumb & fingers of the left hand, insert the instrument into the orifice of the urethra, & then pass the instrument gently onward, until the point reaches the bulbous portion of the urethra. Then withdrawing the instrument slightly from the depression, raise the penis over the instrument & pass it on into the bladder, depressing the handle between the patients thighs -

Some of the obstacles to the introduction of the Catheter, are, the ~~of~~ narrowness of the external orifice; the sinusses of Morgagni, & the edges in the opening

of the triangular ligament of the urethra. When the external orifice is very narrow, relief is afforded by a simple incision. The best mode of retaining the Catheter in the urinary bladder, is by fastening it by tapes inserted into the rings at the end of the instrument fastened to 3 pieces of linen passed upon the perineum. Then plug the instrument, that there shall be no escape of liquid except at given intervals. The instrument should not be too long. If there is obstruction from enlarged prostate gland, a new opening may be formed by passing the prostate gland by a Conical shaped Catheter.

Incontinence of Urine

is occasionally met with, characterized by a dribbling of the urine. Various Causes give rise to this. It may be consequent on an injury; it may be produced by paralysis;

Spasm, or by irritability. Occasionally it occurs in consequence of the operation of lithotomy, or the operation upon the perineum, or high on the hypogastric region. These Cases must be treated upon general principles.

Paralysis of the organ will give rise to incontinence; but frequently it will be indicated by retention of the urine. The Cases must be treated according to Circumstances. When it is produced by Spasm of the bladder, it may arise from some excitement or injury in the neighboring organs, or from organic disease of some kind. When possible, remove the exciting Cause.

There may be merely an irritable Condition of the mucous membrane propagated to the muscular fibres, which must be treated upon general principles.

There may be incontinence of urine in young Children, who wet the bed regularly several

times each night. Most Subjects thus afflicted are of a Stumorous Constitution.

If there is an irritable Spot in the urethra, or morbid sensibility, & it will not give way to general treatment, the part must be Cauterized every 10 or 12 days, until the difficulty has been surmounted. Give such patients the Bicarbonate of Soda & similar remedies, & an anodyne at night. Let the Supper be a dry one & as light as possible.

Stone in the Bladder.

The different operations for removing Stone from the bladder; are lithotomy & lithotripsy the one Consisting in Cutting into the bladder & removing the Calculus; & the other in inserting an instrument into the urethra & crushing the Stone; both of which may be performed in several different manners. In performing the latter operation, the bladder

Should contain a proper amount of water,
 about $\frac{1}{2}$ in an adult. The patient
 should be placed recumbent, with the head &
 shoulders somewhat elevated to relax the ab-
 dominal muscles. Immediately after the
 withdrawal of the instrument, the bladder
 should be evacuated, & if the fragments
 have not all been removed, Of to $\frac{1}{2}$ of tepid
 water may be injected. In withdrawing the
 instrument, no piece of stone should be contained
 in its extremity. The operation may be repeated
 at intervals varying from 4 to 8 days according
 to Circumstances. If the hemorrhage ensuing
 does not cease spontaneously it may be over-
 come by mild means. When some fragments
 become impacted at the neck of the bladder, so as
 to give rise to impediment in the discharge of
 the urine, the rule is to thrust them back
 into the bladder by means of a large

Catheter; or to extract them with proper instruments. When there is stone in the bladder of the female, the operation is generally by Crushing, as the urethra is much shorter than in the male, & especially as the urethra is very dilatable.

Amputation

The great point in amputation is never to perform the operation where it is possible to avoid it. Amputation of a limb may become necessary (1) on account of lacerated, gun shot, or poisoned wounds. (2) On account of Compound or Complicated dislocations & fractures. (3) In consequence of mortification, either idiopathic or traumatic. (4) On account of diseased joints; & diseased bones, as Caries & necrosis. (5) On account of ulceration of the extremities. (6) On account of the existence of Encephaloid disease, osteous Sarcoma, & aneurism. (7th) On account of tetanus.

There are two kinds of amputation; one by the Circular operation, & the other by the flap. The first consists in dividing the Skin, Cellular Substance, & Fascia of the limb in a Circular manner, then dissecting up the parts about $1\frac{1}{2}$ to 3 inches, according to the dimensions of the limb, from the muscles; then cut through the muscles inclining the edge of the knife a little upwards so as to hollow out the parts; retract the muscles & separating them about an inch from the bone, Saw off the bone on a level with the parts; & there is formed a sort of hollow stump. The flap operation is much preferable. The larger nerves must be cut off a little beyond the bone. The arteries must be cut obliquely. To prevent hemorrhage, tourniquets must be applied. After making the flaps, Saw off the bone; &

then tie the vessels in the usual way. Then approximate the flaps by several points of the interrupted Suture, using also, adhesive strips & a bandage.

Gonorrhoea

This is liable to take place in both Sexes, at different periods of life, rarely before the age of puberty. It consists in an inflammation of the mucous membrane of the urethra & of the head of the penis in the male, & of the mucous membrane of the vulva, vagina uterus & urethra of the female.

It is of a specific character, being the result of impure Connection, or of the Contact of a specific virus, the precise character of which we are unable to determine. It usually takes place within 4 or 5 days after the impure Connection, Sometimes sooner, occasionally, later. The disease usually

manifests itself, in the first instance, in the form of a little tickling sensation, & sense of uneasiness, along the anterior portion of the urethra, a feeling of titillation, & perhaps a little uneasiness in passing water. At the same time, there is some degree of discoloration & incipient tumefaction in the head of the penis, the parts feeling a little more distended than natural. In the course of 12 or 24 hours after these symptoms have been observed, they increase & there is a slight discharge of mucus, more than is observed in the healthy state; an increase of the sense of titillation, & scalding, increase of tumefaction & discoloration in the head of the penis. By & by, the mucus discharge is followed by a purulent discharge, & afterwards by pure pus of a greenish aspect, but variable in quantity, & the discharge may be of several drachms in the

24 hours, & when the inflammation is violent the mass is thickened by plastic matter. The scalding in passing water is now very great & there is an increase of the inflammatory condition of the whole of the affected organ. There may be a slight suppuration, or a little vesication of the mucous membrane of the head of the penis. The prepuce is unnaturally red, tumefied, & sensitive. With these symptoms, the patient is frequently troubled with morbid erections of the part at night in bed; & it may remain for many minutes & even for hours. There is frequently a great irritability of the urinary bladder. As the disease progresses, the inflammation has a tendency to extend along the deferential tubes, & the seminal ducts as far as the Epididymis, which becomes painful, tumefied & tender, which is most apt to take

place during the height of the inflammation from indiscretion, & towards the decline.

The disease may last for an indefinite period, after a while becoming chronic.

The morbid action is generally most complicated in the anterior portion of the urethra. When the posterior part is affected, there is pain in the perineum, extending around the anus, & along the inner surface of the thighs, & often up along the groin. When the anus is affected, the patient suffers from a sense of weight, & from tenesmus.

In order to cure the patient promptly, with the least consequence of bad terminations, the treatment should be strictly antiphlogistic. Confine the patient to his room; do not allow him to sit up or walk about the apartment; & at the same time cut off the supplies to the greatest possible extent. Limit him to a

farinaceous diet. Interdict the use of Every kind of meat, & of all Condiments or Stimulants either Solid or fluid. Purge him thoroughly. If the tongue is much Coated & there is headache, & disturbance of the alimentary Canal, & febrile excitement, purge him by means of Calomel, Jalap, Compd Extract of colocynth, with a minute quantity of tartar emetic; or give him a thorough dose ofenna & Epsom Salts.

If the patient is plethoric & the symptoms are urgent, bleed him largely from the arm from a free orifice, until there is an approach to Syncope. Then use the Saline & antimonial mixture; put him under the influence of nauseants & mild aperients. Give from $\frac{1}{4}$ to $\frac{1}{2}$ of 8 gr Tartar Emetic & Colagoges. Sulph Zi every 2 $\frac{1}{2}$ hr 4 hours, according to the liberation of the Stomach & the Condition of the alimentary Canal. When the patient is

delicate, dyspeptic &c, attend to the diet, & give
 occasionally a mild aperient, with rest in
 the recumbent posture. The penis must be
 kept in an elevated position; & the best plan
 is to place it a little above the level of the thigh
 supporting it by naphkins; or if the discharge be
 not very profuse, turn it up that the orifice
 shall look towards the umbilicus; & the organ
 should be frequently immersed in tepid water,
 especially if there is much tumefaction, & disease
 of the mucous covering of the head of the penis.
 An even teaspoonful of Salt may be dissolved
 in a pint of tepid water, & the penis may be
 kept in it from 15 to 30 minutes 3 or 4 times in
 the 24 hours. Employ also mild injections
 consisting at first of tepid water, & water con-
 taining a grain to the $\frac{1}{2}$ of alum or of
 Zinc acetate $\frac{8}{13}$ vel $\frac{1}{4}$, or Plumbi acetate $\frac{8}{13}$
 or some astringent vegetable infusion, as

Common teakney tea, or some simple uni-
lagentous fluid, in the Early Stage of the disease.

As soon as the inflammation has been
moderated, then make use of some astringent
injection, such as Argenti Nitras; Goulard's
Extract Sygar of lead, Zinci Sulphas, vel
Acetatis; nitric or muriatic acid; ^{tannin} red wine &c.
alum &c. Whatever article is employed, the
injection should be mild in the first instance,
& it should be carefully graduated to the tol-
erance of the part. Say of Argenti Nitras from grj
to ℥ss or grvij to Aqua ℥ss & use it twice in the
24 hours, or only once at first, according to
the impression the article has made upon the
mucous membrane. Take q℥t xx to xxx of
Goulard's Extract to Aqua ℥ss vel ij vel viij
of Plumbi Acetas grs ij vel iij to Aqua ℥ss
Zinci Sulphatis vel Acetatis grs ij - iij
of alumine grs iij vel ij to Aqua ℥ss &c

Sannin & Red wine, Should have at first
 a little water mixed with it, taking Oream Rubrum
 ℥ij Sannin ℥p to Aqua ℥ij vel viij.
 Another good injection is Hydragry Biclinari
 gr/8 to Aqua ℥ij. Of the Acids employ
 one or 2 drops to the ounce. The injections
 should be varied, substituting one for the other,
 when the previous one disagrees with the part.
 The bladder should be emptied immediately before
 the employment of the injection. The fluid
 should be retained from two to 5 minutes, so
 as to bring it in contact with every portion of
 the affected surface. After these, Balsam
 of Copaiba or Lukebs constitute the best remedies.
 Balsam Copaiba may be given in various ways.
 This should not be given until the morbid action
 has subsided, the discharge diminished, as
 well as the scalding in passing water; as
 well as the swollen condition of the penis.

The best form to give it internally is in emulsion. The quantity varies from $\mathfrak{z}\mathfrak{i}\mathfrak{i}\mathfrak{i}$ to $\mathfrak{z}\mathfrak{ss}$ or even $\mathfrak{z}\mathfrak{i}$ repeated twice or 3 times in the 24 hours.

Take $\mathfrak{z}\mathfrak{i}\mathfrak{i}$ each of White Sugar & Gum Arabic & rub the Balsam Copaiva up thoroughly with them, & then add gradually water either pine, or Cinnamon or peppermint water, or best of all Camphor water.

A good formula is $\mathfrak{z}\mathfrak{i}\mathfrak{i}$ each of loaf Sugar, & Gum Arabic; Balsam Copaiva $\mathfrak{z}\mathfrak{i}$; Aqua Camphora $\mathfrak{z}\mathfrak{ss}$, Spt. Nit. Aeth. $\mathfrak{z}\mathfrak{i}\mathfrak{i}\mathfrak{i}$ & Morphia say \mathfrak{ss} or its equivalent of laudanum, black swp. or paregoric. The best time to give it is just before a meal, when it will not be so likely to disagree with the stomach. This medicine is to be repeated 2, 3, or 4 times in the 24 hours. It may be given for a week or fortnight if necessary; & if treated properly, a cure may be effected generally in a week or 10 days.

When the patient is unable to use the balsam mixture, give the Capsules, one, two, or three, 3 or 4 times in the 24 hours; or give a pill composed of balsam Copaiba & Magnes. Carbonas; but this is a less beneficial method of giving it.

Some persons cannot use Copaiba in any form by the mouth; & when given by the rectum, the quantity must be much larger than when given by the mouth. If the balsam Copaiba is irritating, it may be suspended for a few days, or altogether, or it may be combined with anodynes. The next best article is the Culebs which should be given in doses varying from 2 to 4 drachms, 3 times in the 24 hours. This disease may terminate in a chronic discharge, a little milky, & a little thicker than in the natural state & in larger quantity, constituting what is called Gleet. There may be a little itching in

passing water; but the tumefaction will have
 subsided with the reddish appearance of the
 organ, & there is very little morbid erection;
 & in this condition the urethra may continue
 for months, & even for years; or the disease
 may gradually wear itself out spontaneously,
 or through the instrumentality of mild treat-
 ment. In case of Chordee or morbid erection,
 the organ will generally be curved downwards
 towards the perineum; but sometimes it may
 be curved upwards. When there is Chordee, the
 best plan is to wrap up the organ in a wet
 napkin wrung out of ice water, & give at
 bedtime a full dose of Morphine, Tatar emetic,
 & Camphor. If the patient is an adult, give
 from 8grs to 9ij Morphine with 20grs Camphor
 & $\frac{1}{4}$ ss Tatar emetic. An anodyne injec-
 tion into the rectum may be used with advan-
 tage, Sandalwood ℥jss and ℥jss with Camphor

in some mucilaginous fluid. Cold applications may be used; or during cold weather, or in nervous patients, warm applications, either simple or mediated, covering the genitals & the surrounding regions. If the penis has become Crooked, endeavor to disperse of the effused substance by Sorbefacients, locally & internally; using, after the violence of the inflammation has gone down, various kinds of Embrocations, liniments &c of a stimulating character; & every night a grain or two of mercury may be given to stimulate the absorbent vessels.

Occasionally the patient is affected with retention of the urine. Endeavor to overcome this by anodyne injections, fomentations; & anodynes by the mouth, a diachm of Laudanum as an injection; or a good dose of Morphia by the mouth, & apply to the genitals cloths wrung out of warm water

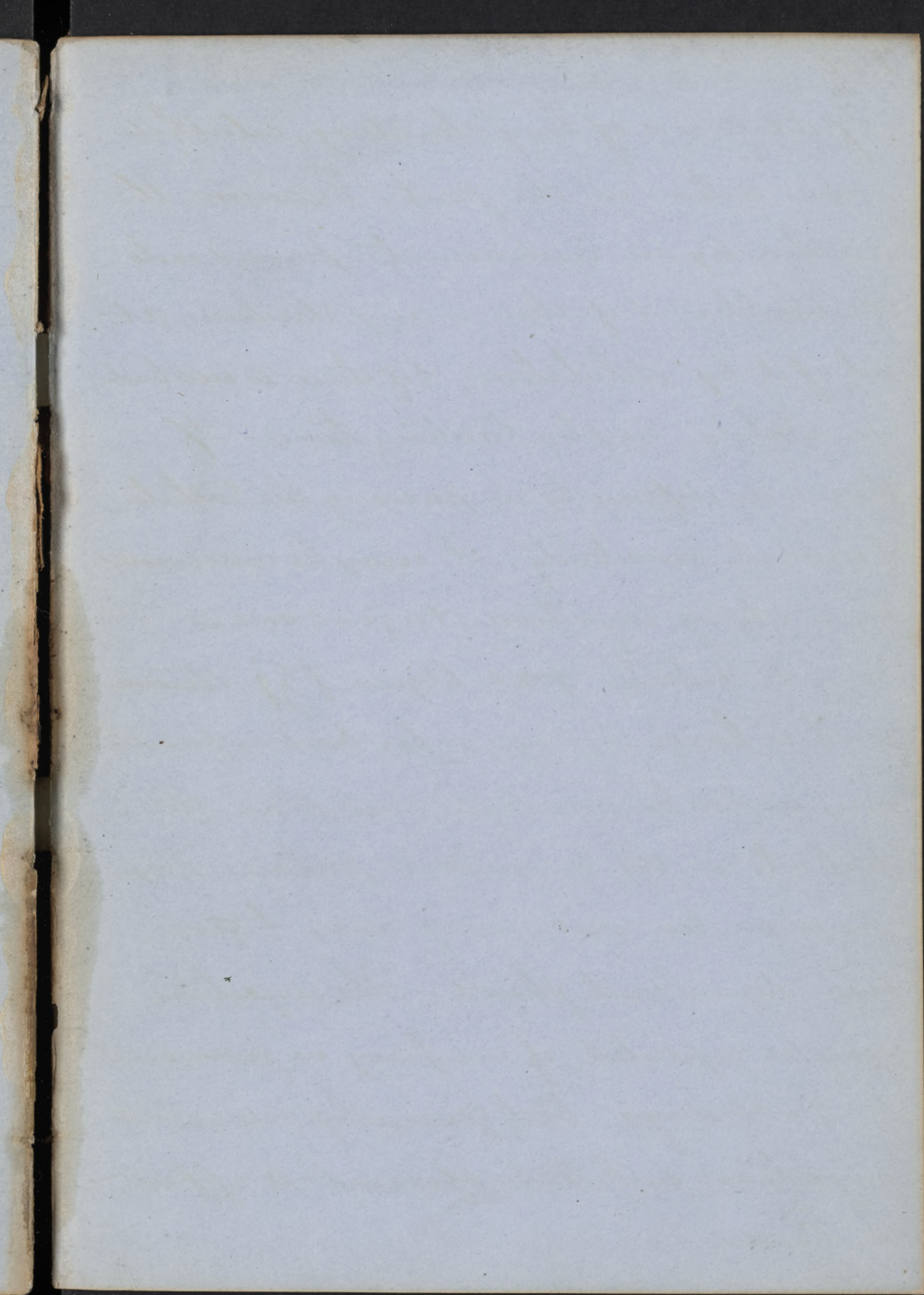
& Landanum, & to the surrounding parts.

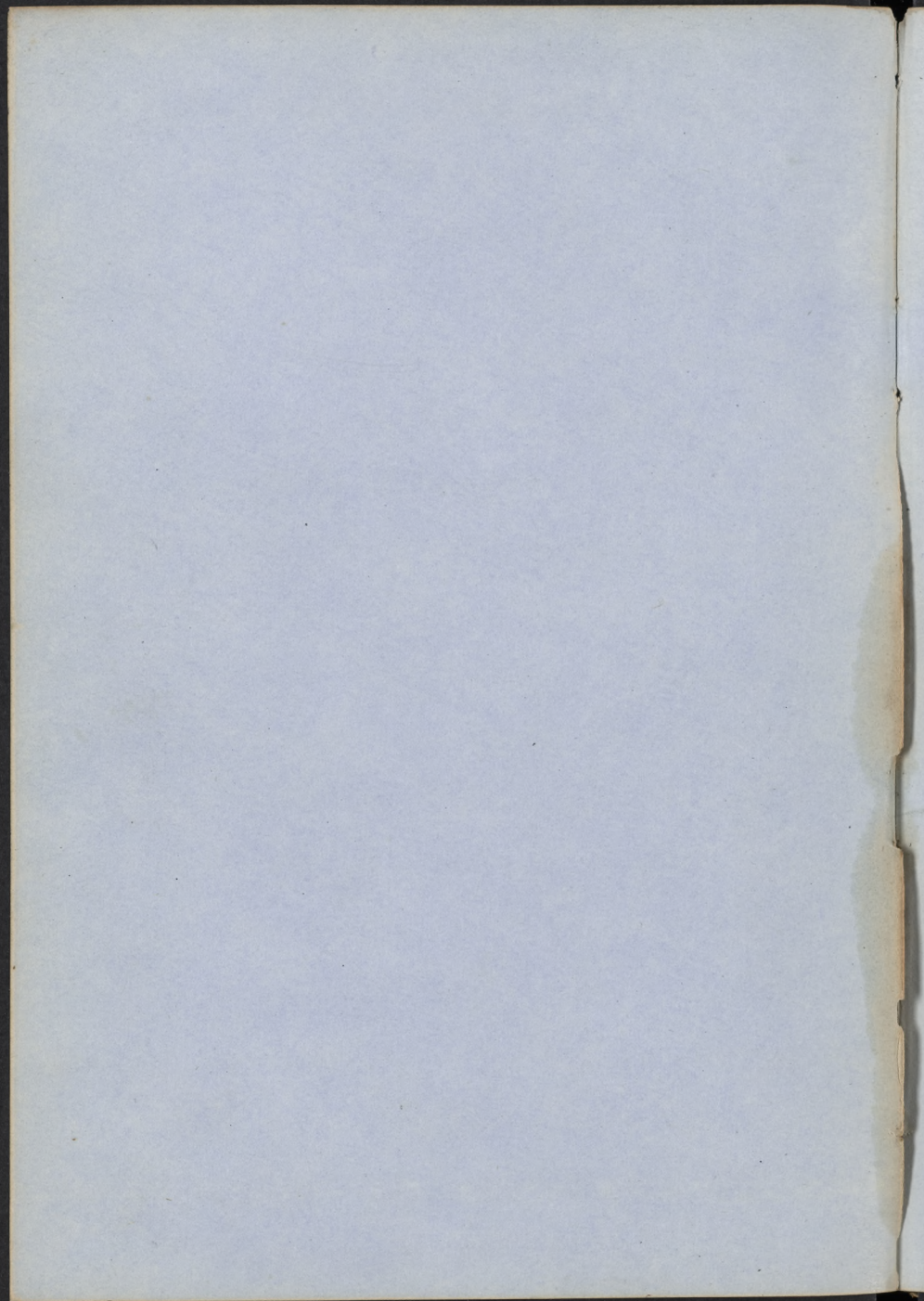
If this does not succeed, use the Catheter as gently as possible. When there is irritability of the bladder, use antiphlogistic means; warm bath; fomentations; & even leeches to the perineum, & anodynes by the rectum & mouth; or a combination of tartar emetic & opium in full doses.

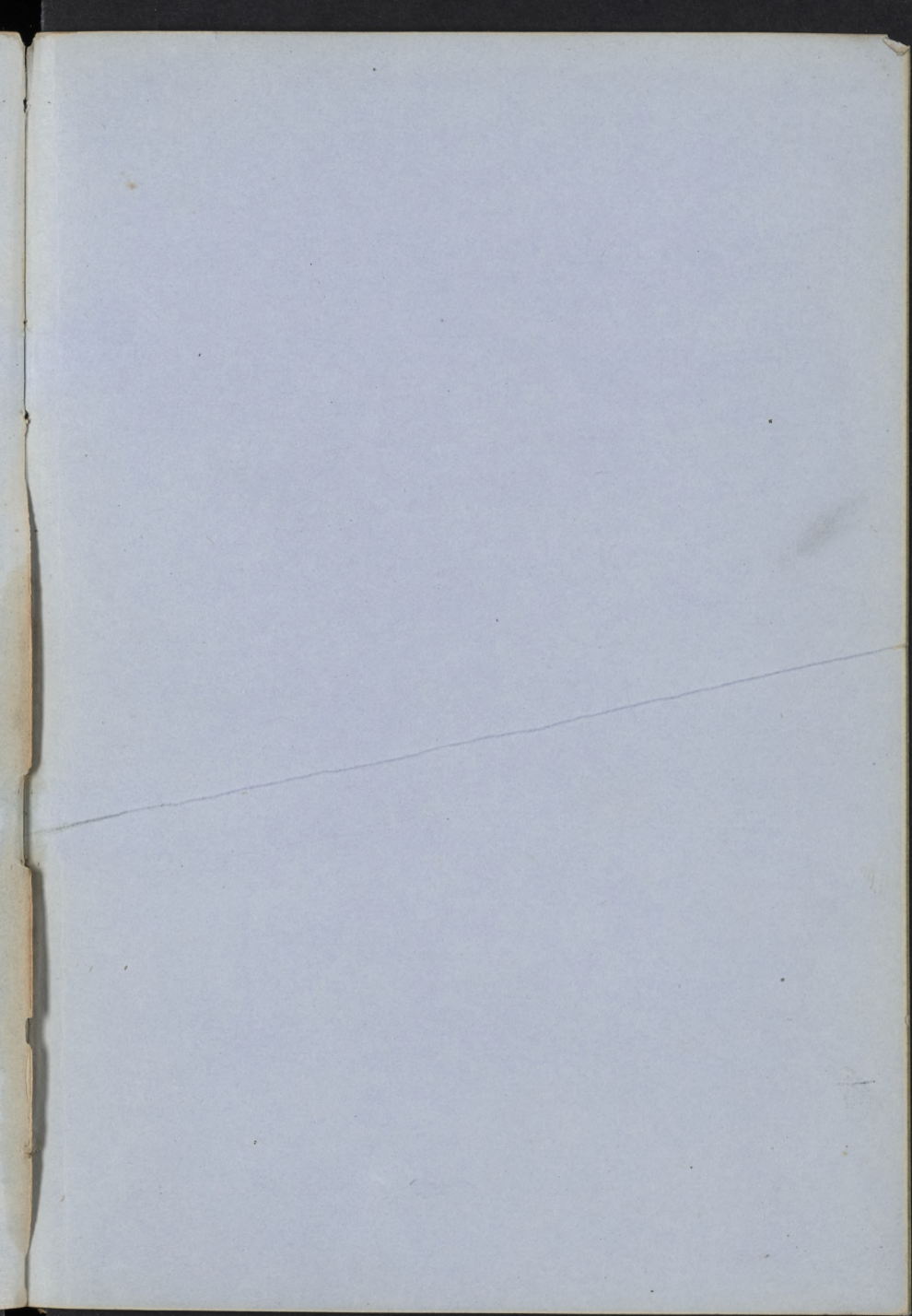
When the Gonorrhoea is suddenly arrested from some cause, the patient suddenly feels uneasiness in the Epididymis, & in the testicles, which now become inflamed. Then the patient must be treated strictly antiphlogistically. Place him recumbent, purge him, bleed him; if possible, apply leeches to the perineum & surfaces outside & endeavor to subdue the morbid action.

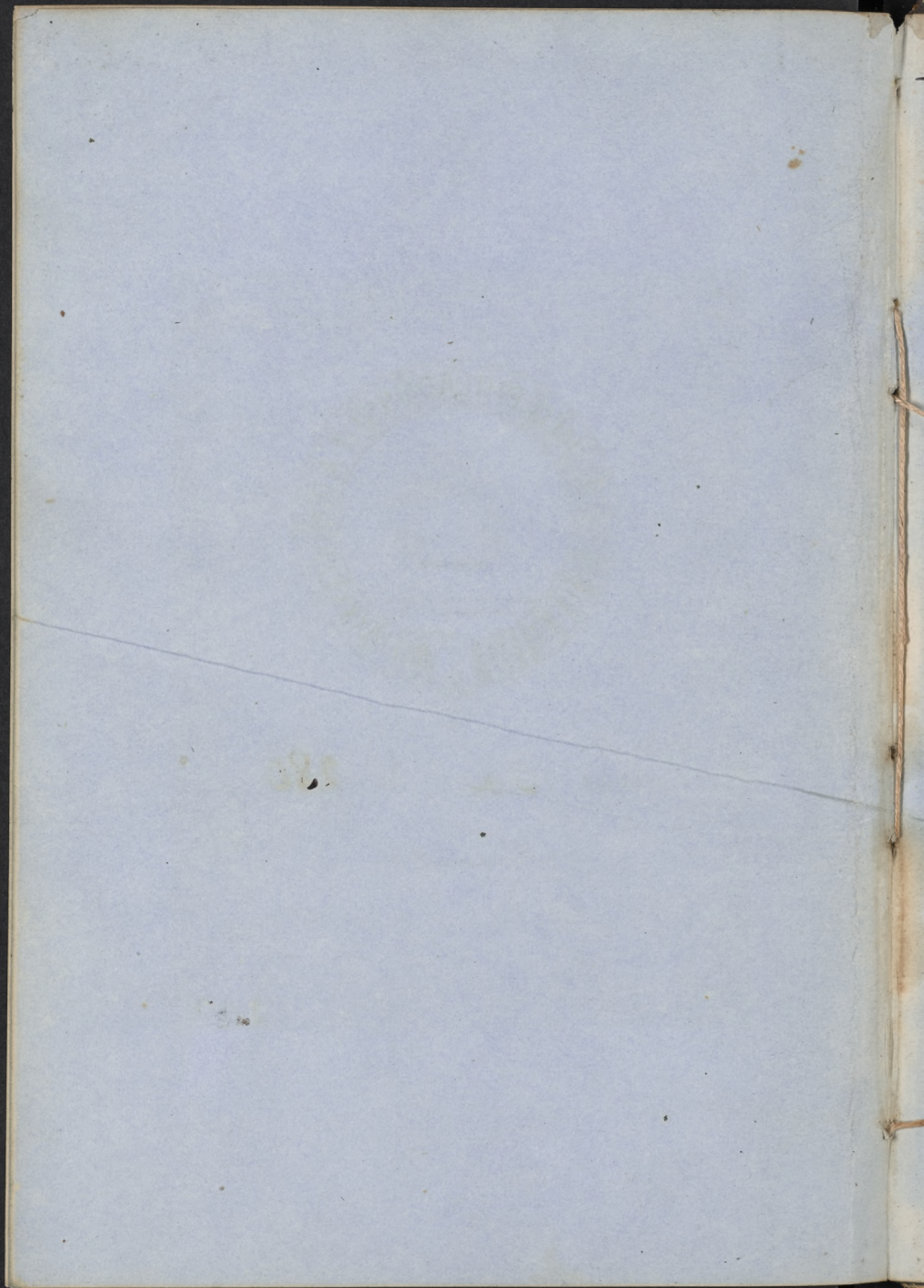
In the chronic state of the disease, the treatment must be modified.

If the case is of long standing, Establish a new action in the part. Examine the urethra by an instrument passed into the bladder; & if there is any stricture, get rid of it by dilatation, & if there is morbid sensibility, employ antirrhization. If there is no difficulty in passing the Catheter, & morbid sensibility, it may be overcome by a strong injection; & a good one is *Argent. Putratus grxx Aqua ℥j. trorum* with a large Syringe as far back as possible once in 24 hours. Afterwards place the patient in the recumbent posture; keep him on low diet; purge him; & give him demulcent fluids. The injection may be repeated if necessary in seven or ten to 3 or 4 days, but generally one or two injections will be sufficient to effect a cure.





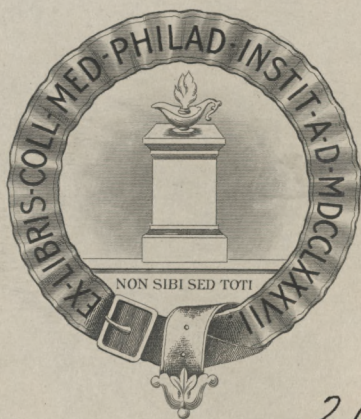




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J. Solis Cohen, M.D.

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